

INDEPENDENT MAINTENANCE

WESTERN EUROPE 1989 - 1994

INPUT

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WESTERN EUROPE 1989-1994

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Customer Service Programme in Europe

*Independent Maintenance—
Western Europe, 1989-1994*

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Abstract

This report surveys the Western European market for independent maintenance services and contains the results of research carried out by INPUT during 1989. Contained within the report is a five-year market forecast for Western Europe covering the period 1989 to 1994.

The report provides an assessment of vendor perceptions and opinions relating to the driving forces and inhibitory factors that are influencing market activity and growth within the European independent market. Data are also provided on vendor activity within different sectors of the market, for example those related to system size, manufacturer and industry type.

Also contained within the report is an analysis of individual country markets, namely: France, Italy, the Netherlands, Spain, Sweden, the United Kingdom, West Germany, Austria and Belgium.

This report contains 163 pages, including 46 exhibits.



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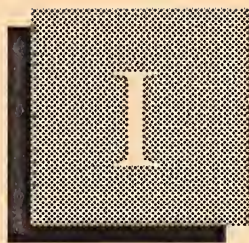
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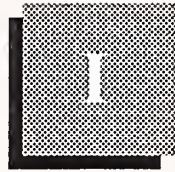
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Introduction





Introduction

This report has been produced as part of INPUT's 1989 Customer Services Programme—Europe.

A

Objective

The primary objective of this report is to analyse the independent maintenance market in Western Europe in terms of an overall five-year forecast. A second objective is to provide individual market forecasts for the major country markets within Western Europe.

Additional objectives are to:

- Provide company profiles of TPM vendors
- Assess the factors that contribute to the growth patterns
- Evaluate market driving forces and inhibitory factors
- Provide data related to the various market sectors and niches that independent maintenance companies operate within

In more general terms, this report is intended to provide a complete overview of the independent maintenance market in Western Europe.

B

Scope and Definitions

This report assesses the entire market for independent maintenance within Western Europe. INPUT defines independent maintenance activity as all maintenance of computer and data communications equipment not provided by the manufacturer of that equipment. In detail, this market can be divided into three subsectors of activity:

- Maintenance conducted by completely independent—and thus usually referred to as third-party maintenance (TPM)—vendors that are solely or partly dedicated to the provision of this activity

- Maintenance conducted by an organisation (typically a dealer or value-added reseller) that is responsible for the sale of the equipment but is not the manufacturer
- Manufacturer-independent maintenance, which is maintenance provided by a manufacturer that does not supply or badge-engineer the maintained equipment. Normally this type is termed multivendor maintenance.

The report assesses the size of the total independent maintenance market analysed across these three subsectors for the base year of 1988 and provides a five-year forecast for the period 1989 to 1994.

C

Methodology

The field research for this report was conducted between April and June 1989.

Vendor data was obtained during structured telephone interviews with 97 vendors of TPM services throughout Western Europe. Data relating to the views and perceptions of hardware manufacturers were obtained from discussions with manufacturers. These discussions were conducted on a regular and ongoing basis by INPUT.

D

Report Structure

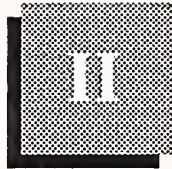
The remaining chapters of this report are organised as follows:

- Chapter II is an Executive Overview that provides a concise summary of the whole report.
- Chapter III provides an assessment of the forces operating within the independent market, and also lists merger and acquisition activity within the market.
- Chapter IV provides a five-year market forecast for Western Europe overall and a five-year forecast for individual-country markets for the period 1989 to 1994.
- Appendixes A through H provide individual profiles of TPM vendors in the different European countries.
- Appendix I reconciles INPUT's 1989 and 1988 market forecasts for the Western European TPM market.



Executive Overview





Executive Overview

This executive overview summarizes the key findings that emerged from the report and presents them in a concise form.

A

Key Market Characteristics

A number of changes have caused a major restructuring of the independent maintenance market in Western Europe. There are two dominant factors responsible for the restructuring and three secondary factors that are providing an influence on future trends. These factors are listed in Exhibit II-1.

EXHIBIT II-1

Key Market Characteristics

- Significant merger and acquisition activity
- Large Pan-European TPM companies emerging
- TPM trend toward:
 - Maintenance-related service
 - Diversification
- User preference
 - Single-source service
 - Equipment vendor service
- Equipment vendors' regaining some initiative

The two major factors that have had a major impact on the market and will tend to shape the future of independent maintenance are:

- During 1988 and 1989 there have been significant acquisitions and mergers that resulted in the appearance of new market leaders.
 - Thomainfor, in France, has acquired the TPM business of Control Data. This, together with other acquisitions, will likely place Thomainfor in the number-two position in the TPM market.
 - Concept has acquired Spectral and MIS in France and this company, previously unknown in the TPM market, joins the leading five TPM companies in Western Europe.
 - Thirty-five mergers and acquisitions are identified by INPUT.
- Partly as a result of merger and acquisition activity, and also due to expansion, a number of pan-European TPM companies have emerged. The most significant of these are:
 - Granada
 - Thomainfor
 - Sorbus
 - Telub
 - Geveke

In addition to these major changes in the restructuring of the independent maintenance market, there are also a number of secondary factors influencing the future.

- TPM companies are diversifying from the traditional business of providing hardware maintenance services and are reducing their reliance on hardware maintenance as a source of revenue. This diversification is taking one or both of the following directions:
 - The implementation of maintenance-related service offerings—for example, installation/deinstallation, disaster recovery, consultancy and planning services
 - Diversification away from the strict confines of service into equipment sales, software sales, computer supplies, external training etc.
- User research indicates a strong preference for single-source service. Almost 80% of users state this preference but, more significantly, around 90% of users express a preference for single-source service supplied by one of the user's equipment vendors. Only 5% of users express a preference for TPM single-source service. These user preferences suggest that significant opportunities are available to equipment vendors.

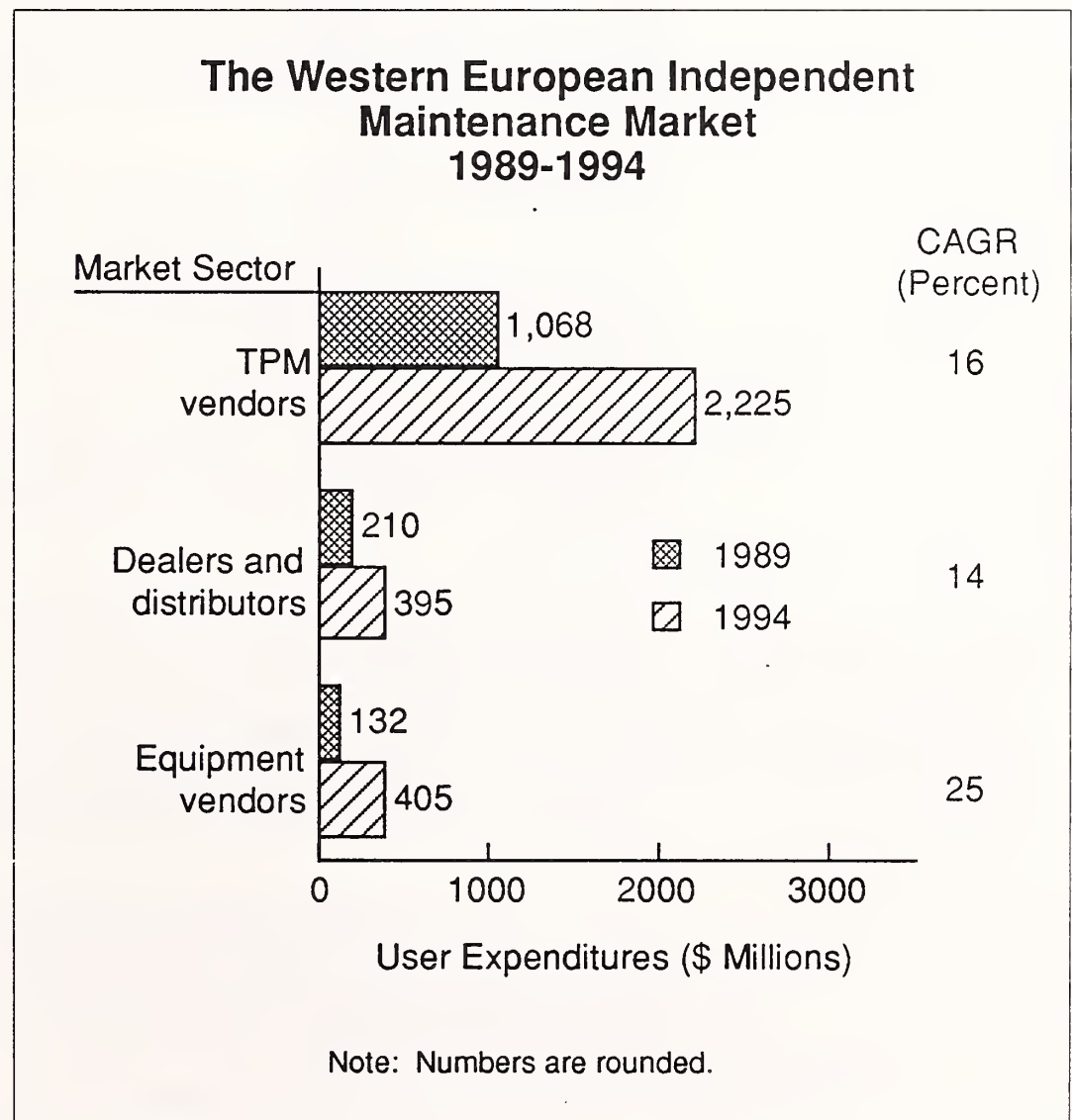
- Based on the results of user research and the strategies of equipment vendors, the equipment vendors' segment of the independent maintenance market is projected as the highest growth segment. INPUT forecasts that the equipment vendors are set to regain some initiative in the customer services market through implementation of single-source or multivendor service offerings, having previously lost ground to the TPM vendors. Vendor research indicates that around 90% of equipment vendors currently have, or are planning to launch, single-source service strategies.

B

Market Size and Growth

INPUT's forecast for the independent maintenance market in Western Europe is shown in Exhibit II-2 and covers the period 1989 to 1994. The overall size of the independent maintenance market in Europe is estimated at \$1410 million in 1989. The market is projected to grow at a 16% CAGR over the period 1989 to 1994 and to reach an estimated value of \$3025 million in 1994.

EXHIBIT II-2



Third-party maintenance forms the larger proportion of the independent maintenance market and represents a market share of 76% in 1989. Due to the high growth rate of the equipment vendor segment, this market share will fall only slightly by 1994.

The other two segments of the independent maintenance market, as defined by INPUT, are much smaller. The dealer and distributor segment has a 15% market share and that of the equipment vendors 10% in 1989.

The highest growth segment of the independent maintenance market is that occupied by the equipment vendors, forecast to have a 25% CAGR over the period 1989 to 1994. This growth rate indicates that the market share of the equipment vendors will increase to 13% in 1994.

Market penetration of the customer service market by independent maintenance in 1989 is estimated at around 12% overall for Western Europe, based on INPUT's 1988 forecasts for the customer services market. Penetration of the customer services market is projected to increase to approximately 18% by 1994, due to the customer services market's growing at a slower rate than independent maintenance—8% compared with 16%.

Factors driving the growth of independent maintenance are:

- Increasing trends towards multivendor sites are enhancing single-source service opportunities and, therefore, maintenance revenues are moving into the independent sector.
- The increasing trend is for computer equipment, particularly low-end systems, to be supplied through third-party channels such as dealers and VARs. These third parties tend to support and maintain the equipment they sell.
- TPM companies are greatly enhancing their credibility as an alternative to equipment vendor service.

Constraints on growth are provided by:

- Computer equipment is becoming more reliable and requiring less service.
- Smaller computer systems, particularly PCs, are seen to be so reliable by users as not to require a formal service contract. Figures quoted by some vendors suggest that up to 60% of PCs are being sold without formal service contracts.

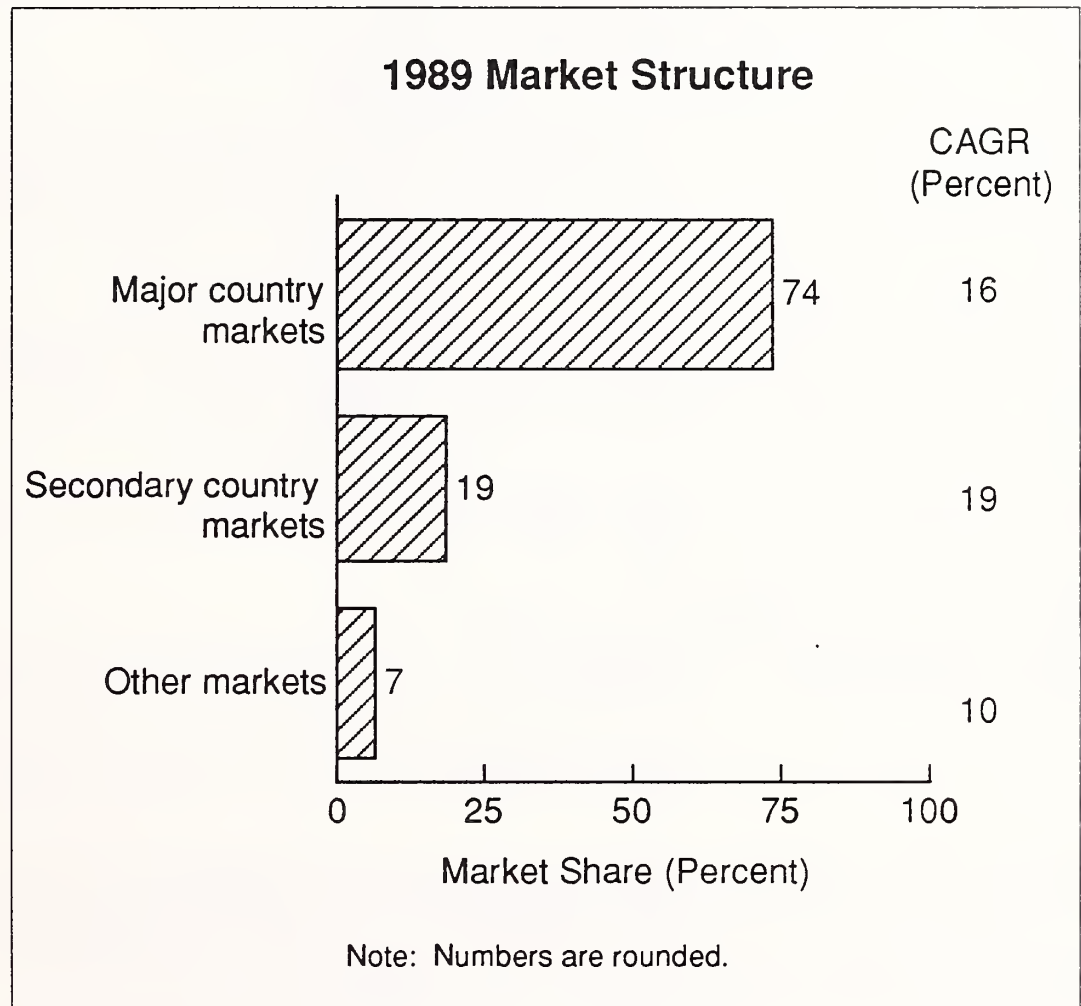
- There is continuing user conservatism and resistance to TPM in some industry sectors and country markets.

C

1989 Market Structure

Exhibit II-3 illustrates the overall structure of the independent maintenance market in Western Europe.

EXHIBIT II-3



The major country markets account for the largest proportion of revenues that are derived from independent maintenance. Because the projected growth for these country markets, due to their dominance, is the major factor deciding the overall growth of the independent maintenance market in Europe, their share of the market will remain essentially constant over the forecast period 1989 to 1994.

The major country markets are:

- France, with 1989 revenues projected at \$275 million
- Italy, with 1989 revenues projected at \$117 million
- The United Kingdom, with revenues projected at \$508 million
- West Germany, with revenues projected at \$126 million

Secondary country markets account for just less than 20% of the total Western European market for independent maintenance. Although these markets form the less significant proportion of the European independent maintenance market, projected growth overall for these markets is higher than that forecast for Europe overall (19% CAGR compared with 16% CAGR). Therefore, over the forecast period, the market share of the secondary country markets will increase to about 21% by 1994.

The secondary country markets are:

- Austria, with 1989 revenues projected at \$20 million
- Belgium, with 1989 revenues projected at \$38 million
- The Netherlands, with 1989 revenues projected at \$97 million
- Sweden, with 1989 revenues projected at \$54 million

The extremes of growth in the Western European independent maintenance market are represented by Spain, which has the highest growth (forecast at 28% CAGR), and Sweden, which has the lowest growth (forecast at 9% CAGR).

The rest of Europe includes Portugal, Turkey, Greece, Ireland and Finland.

D

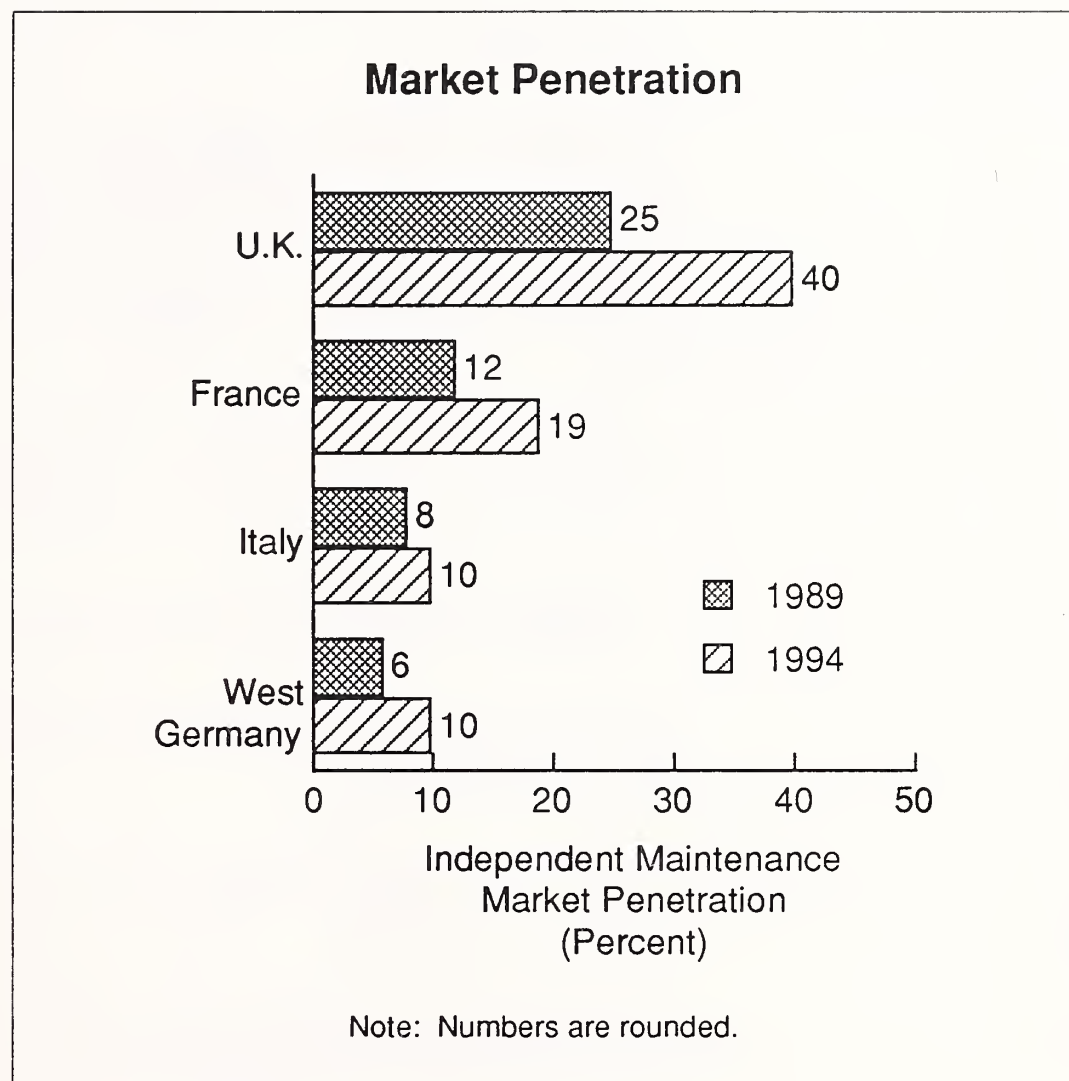
Market Penetration

Penetration of the customer services market by independent maintenance in the four major country markets in Western Europe is illustrated by Exhibit IV-4, which also indicates the growth of market penetration by independent maintenance over the forecast period 1989 to 1994.

The level of market penetration is a measure of the state of development of independent maintenance. The data contained in Exhibit IV-4 include each of the three market segments, as defined by INPUT, for each country market. These segments are:

- Third-party maintenance
- Dealers and distributors
- Equipment vendors

EXHIBIT II-4



The United Kingdom represents the most developed independent maintenance market in Western Europe, indicated by a market penetration of 25%. Over the forecast period, the United Kingdom is projected to retain its status and remain the most highly penetrated market. The reasons include the following.

- Independent maintenance originated in the U.K.; its growth and popularity stimulated activities in other European countries.
- As a result of the U.K.'s being the originator of independent maintenance in Europe, a number of large TPM companies have had time to develop and become established. In doing so, these companies have marketed their services aggressively. As TPM companies' size increased, they were able to offer a creditable and viable alternative to equipment vendor service and to gain user acceptance.
- Leading TPM companies in the U.K.—DPCE, CFM, SMS and Mainstay—have now been acquired by Granada. The result of these acquisitions is the formation of the largest TPM company in Europe. Granada

has sufficient critical mass to offer a very serious challenge to equipment vendors.

West Germany has the lowest market penetration of the customer service market by independent maintenance in Europe. Although West Germany is the largest market in Western Europe for computer products, independent maintenance has been very slow to develop; market penetration in 1989 is estimated at 6%. The reason for the low state of development of independent maintenance in Germany is a "cause and effect" syndrome:

- Users' conservatism and resistance to third-party maintenance has constrained the growth of TPM. Users were not prepared to take the risk of moving away from equipment vendor services.
- As a result of user resistance that constrains growth, the development of TPM companies of reasonable size has been restricted.

An example of the difference between the most and least developed independent maintenance markets in Western Europe is provided by the following comparison.

- In West Germany there were only three TPM companies with 1988 revenues of \$5 million or higher. The largest is Sorbus, with 1988 revenues of \$30 million.
- Compared to West Germany, the U.K. has sixteen TPM companies with 1988 revenues of \$5 million or higher, and eight of these companies have revenues over \$10 million.

E

1988 TPM Market Leaders

The leading TPM companies in Western Europe in 1988 are listed in Exhibit II-5, which also indicates the country markets in which those companies listed are market leaders and their market share in those countries.

Granada dominates the market. Granada's revenues are larger than the combined revenues of the other four companies listed; Granada is the market leader in the two largest independent maintenance markets in Western Europe.

EXHIBIT II-5

1988 TPM Market Leaders

Company	1988 Total Revenues \$ Million	Market Leader In:	Country Market Share (Percent)
Granada	167	Europe U.K. France	14 26 10
Sorbus	50	West Germany	12
Control Data	32	-	-
Geveke	31	The Netherlands	28
Ibimaint	27	Italy	26

Note: (1) Numbers are rounded.

(2) Geveke was renamed Getronics Service in July 1989.

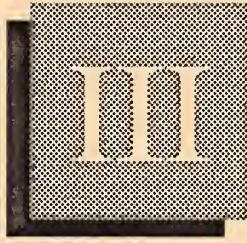
(3) The European TPM business of Control Data was acquired by Thomainfor in June/July 1989.

The other European country markets tend to be characterized by a market leader that is a national company, although some of these companies are also operating at a multinational level. Leaders in other country markets are:

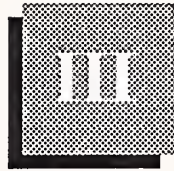
- In Spain: Eltec/Morsa with 1988 revenues of \$8 million
- In Sweden: Telub with 1988 revenues of \$15 million

Following a period of intensive merger and acquisition activity in the European independent maintenance market, the ranking of leading TPM companies is changing. In 1989, the list of leading TPM companies will contain some new names:

- Granada
- Thomainfor
- Sorbus
- Concept
- Getronics (was Geveke)



Western European Independent Maintenance Market



Western European Independent Maintenance Market

A

European Independent Maintenance Market Development

Independent maintenance is now well established in most countries in Western Europe. Penetration by independent maintenance of the total customer services market—estimated at around 12% in 1989, based on forecasts for the customer services market made in 1988— indicates the degree to which it has become established. The success of independent maintenance varies between countries, with the U.K. being the largest market and the Scandinavian countries tending towards the other extreme. INPUT estimates that by 1994 independent maintenance will represent approximately 18% of the customer services market. In other words, the independent maintenance market will grow at a faster rate than the total customer services market, 16% CAGR compared with 8% CAGR.

Third-party maintenance (TPM) is one of three segments of the market, as defined by INPUT, and represents the largest proportion of the independent maintenance market. TPM is estimated to represent around 75% of the independent maintenance market in 1989.

The continuing success and expansion of independent maintenance, particularly of the TPM segment, is due to a number of reasons.

- The ability of TPM vendors to demonstrate the availability and benefits of an alternative source of service
- Increasing use by equipment vendors of third-party distribution channels such as dealers, distributors and VARs. In many cases, this pattern has resulted in the products sold through third-party channels being serviced and supported by the dealer or distributor.
- The increasing trend of having computer systems from more than one equipment vendor on a user site. TPM companies and now the equipment vendors are providing multivendor or single-source service, a requirement driven by user needs.

- The trend for computer systems to be used across an increasingly wide spectrum of companies, industry sectors and applications. A consequence of this trend is that computer systems are no longer the prerogative of sophisticated users. In short, computer systems are now embedded into virtually every facet of commerce, industry and government.
- The introduction of PC-based systems and products, in large volumes, has created opportunities for TPM companies and dealers. Because the equipment vendors are less well positioned to service high volumes of low-cost systems, TPM companies and dealers have tended to focus on PC systems.

The pace of technological advance has stimulated the rate of change—systems are becoming smaller, more powerful and cheaper. A decade ago, the segmentation of computer systems into mainframes, minicomputers and microcomputers was evident. These definitions have now become blurred, and desktop systems of increasing power proliferate. The need to make information from these systems widely available to large numbers of users has created the convergence of computer systems with telecommunications. The advancement of local- and wide-area networks (LANs and WANs) has been the result of this need, and represents a further area of opportunity for maintenance vendors. Paralleling these developments, there has been a move from narrow proprietary computer systems to open systems and standards—whether imposed by industrial market forces or set by international bodies. This movement was exemplified by the introduction of the personal computer, which has created a vast industry of compatibles. UNIX and Open Standards emerged from a demand by users for common systems that transcended individual manufacturers' offerings, thus avoiding being locked into narrow avenues of choice.

Independent maintenance from TPM vendors also owes its high rate of growth over the last decade to user demand for:

- Cost savings
- Single-source maintenance
- Flexibility

Companies specialising in the provision of maintenance offer economies. As these companies increase in size and capability, so do the range of products maintained and the services provided. Characteristic of TPMs is their rapid adaptability to user needs—unlike manufacturers, which, because of size and structure, are less able to react as quickly.

TPM companies and equipment vendors alike have come under pressure as technology and the economies of scale reduce hardware costs and hence maintenance revenues. This pressure is given an added twist by intense price competition in certain countries. Increasing numbers and

reliability of each new generation of equipment only partly ameliorate this situation; margins derived from the traditional maintenance sector are narrowing as costs of providing this service also rise. A strategic response from TPM companies has been a diversification into other services that may be broadly categorised as follows:

- Convergent services
- Divergent services

Convergent services are those closely related to maintenance, typically:

- Installation and deinstallation
- Software support
- System configuration

Divergent services relate to the wider requirement of users, for example:

- Disaster recovery
- Product sales
- Network management

It is not unusual for independent maintenance vendors to provide extra service products as added-value items in their product ranges.

It is apparent that as European independent maintenance markets mature and competitive forces increase, the provision of services expands for the following reasons:

- To meet user demands
- As a response to competitive pressures
- To exploit areas of business with better margins
- In anticipation of traditional maintenance activity reaching a plateau

Some pan-European TPM vendors see the increase in services other than maintenance as their primary activity in the future. "TPM", as one respondent remarked, "is now an obsolete term." This comment signifies a metamorphosis from engineering companies to service companies.

A further strategic response to the pressure of reducing margins has been for larger TPM companies to acquire Fourth-Party Maintenance (FPM) companies or for larger companies to diversify into this type of business. This activity is often directed towards the development of new low-cost service types, generally for the PC and terminal maintenance market. The reliability of computer systems is encouraging a trend of corporate and small-business users that dispense with maintenance entirely. If something goes wrong, a spare machine is installed, and the defective unit is carried into a nearby workshop for repair. A further benefit of a suitable FPM acquisition is the acquired in-house ability to repair an

increasing array of sophisticated subassemblies in equipment that forms part of the contract base of the TPM vendor.

INPUT notes that the larger TPM vendors are tending to offer such a wide range of services that there are signs that they are commencing to market what is in part operations management—hitherto the province of systems and software houses. This point is taken further by some vendors in an increasing trend to market products and equipment—previously the province of equipment vendors. Equipment vendors are shown to be taking an increasing interest in single-source services, which indicates a convergence of interests between the TPM companies and the equipment vendors—that of total service solutions.

B

Quality Standards

TPM vendors have, in most cases, left behind the image of poor service set by a few in the past. Under pressure from the higher expectancies of users and the quality standards of the equipment vendors, TPM vendors almost universally acclaim the need to aim for the highest standards of quality and professionalism. This need is manifestly apparent in companies that have successfully registered for BS 5750 (ISO 9000), such as Sorbus and Quest Computer Services. Outside of the U.K., however, formal quality standards have yet to make an impact.

Obtaining quality standards and maintaining them is not achieved without an overhead of cost and management time that some vendors find unacceptable. It remains to be seen what the balance of advantage will be between organisations that have achieved certification to standards and those that have not. Vendors without these qualifications may well find themselves excluded from certain areas of business and precluded from advantageous liaisons with some manufacturers. Successful marketing by those with BSI 5750 (ISO 9000) registration may be necessary to maximise the benefits believed by vendors to derive from successful certification.

C

Leading European TPM Vendors

The development of the independent maintenance market has been given added impetus over the last year. A number of acquisitions by TPM companies have initiated operations on a pan-European basis and these companies are positioned to take advantage of the single market opportunities in 1992. Amongst these are:

- Granada Computer services
- Thomainfor
- Sorbus Europe
- Concept
- Geveke

Thomainfor and Concept have recently achieved a leading position in Europe through acquisitions—Thomainfor by acquiring the European TPM business of Control Data, and Concept by acquiring Spectral and MIS. The position of Granada in the TPM market also resulted from a series of acquisitions that involved the acquiring of companies that were already market leaders (i.e., DPCE).

Exhibit III-1 lists the leading TPM vendors in Western Europe by 1988 revenues, prior to 1989 acquisitions.

EXHIBIT III-1

**Leading TPM Vendors in Europe Ranked
by 1988 Revenues**
(U.S. Dollars Millions)

Company	1988 Revenues	TPM Market Share (Percent)
Granada	167	15
Sorbus	50	5
Control Data	32	3
Geveke	31	3
Ibimaint	27	3
Telub	25	2
Metroservice	22	2
Econocom	21	2
Extel	20	2
Spectral	20	2
Computeraid	17	2
CGEE	17	2
MIS	17	2
Thomainfor*	16	2
ECS	14	1
Datalogic	13	1

Note: Numbers are rounded.

D

Manufacturers' Role
in Independent
Maintenance

TPM vendors recognise that maintenance can be the key to a wider range of opportunities, and equipment vendors are aware that loss of hardware maintenance business can lead to a loss of account control that may impact future business opportunities.

INPUT has identified that manufacturers have three broad strategies to meet the challenge offered by TPM vendors. The first, and most aggressive, involves a direct and active involvement and becomes manufacturer third-party maintenance. Olivetti provides the best example of this in the U.K., where Olivetti's existing maintenance service, called OI service, won one of the largest TPM contracts ever offered against more-traditional TPM vendors.

Sometimes the most-effective method of expansion into independent maintenance by manufacturers is to acquire a TPM company directly. Again, Olivetti is cited as the best example because it has now acquired a total of thirteen TPM companies throughout Europe. Olivetti claims to be the second largest independent maintainer in Europe and the third in the U.K. On the basis of INPUT's definition of independent maintenance market segments, Olivetti's independent maintenance revenues could fall within the TPM segment or the equipment vendors' segment, depending on the source.

The second, and more defensive strategy, is designed to protect the existing customer base and has undergone some modification in the light of experience. Initially certain equipment vendors incorporated independent maintenance activity within the framework of their own field service organisations. It was found that the level of discounting to compete, and the cost of sale necessary to obtain business, imposed a strain on margins. Subsequent activity reverted largely, but not exclusively, to a concentration on the core business itself. INPUT's researches now indicate a further change of direction on this implementation of independent maintenance by some equipment vendors: a strategy by which the equipment vendors offer multivendor service, but only on sites that include their own equipment. This practice is aimed at account control and at providing single-source service solutions to meet customer requirements.

Major equipment vendors now have a policy of aggressively pursuing account control of customers; previous inflexibility is being abandoned with the object of providing a single-source maintenance agreement. The method chosen to enable single sourcing is a high level of co-operation between manufacturers. This co-operation can take the form of subcontracting foreign pieces of equipment back to the original manufacturer. It also involves the resident service vendor in providing a first-line response to fault calls, hence reducing spurious and unnecessary call-outs for the subcontractor. This activity sometimes operates under the mantle of what is called a manufacturer's support agreement—not a strict procedure but an essentially flexible response to each situation.

INPUT believes this form of independent maintenance will satisfy end users for whom a single point of contact is the primary objective; however, this form may not provide the degree of economy offered by TPM vendors. INPUT's analysis of other data indicates a high degree of user preference for equipment vendor single-source service, thereby placing the TPM companies at a disadvantage in some cases.

A third strategy adopted by manufacturers is forming alliances with cooperative and noncompeting TPM companies. A single-source maintenance policy with customers is then adopted by subcontracting specific equipment to the TPM. This strategy could also work in reverse if the TPM company subcontracts maintenance of the manufacturer's equipment back to them.

E

Acquisitions

The fast rate at which acquisitions, mergers and reorganisations have occurred over the last twelve months continues to change the face of independent maintenance in Europe towards a broader-based service industry. Trends for making acquisitions can be broken down into the following categories:

- TPM companies acquire other TPM companies to obtain growth and/or a specialist market niche.
- TPM companies acquire service companies with a required expertise—such as fourth-party maintenance.
- Manufacturers acquire TPM vendors.
- Nonmaintenance organisations acquire TPM companies.

The changes wrought by previous years' acquisitions still reverberate through the industry. Independent maintenance is a people-based business and it is apparent that, following acquisition or merger, a significant period of settling is to be expected. The effect of some changes, mostly in larger companies, has yet to be fully realised.

The most significant TPM vendor acquisition this year is acquisition of Control Data's European independent maintenance organisation by Thomainfor in France—a Thompson CSF company. The new integrated company will rival or exceed Sorbus in size, but both are some way behind the market leader, which continues to be Granada. These independent maintainers have now achieved a significant European-wide presence, strengthening their position in advance of greater European integration in 1992.

Independent maintenance companies are expanding the range of services on offer. This expansion is being achieved by the acquisition of specialist service companies. Some typical services acquired by this strategy are:

- Fourth-party maintenance
- Media supplies
- Installation, computer features and upgrades
- Product sales

Fast-growing and, in some cases, highly profitable TPM companies have attracted the attention of financial institutions and manufacturers in increasing numbers. This attention is, perhaps, a recognition that the independent maintenance business is no longer immature and is now a leading computer services business.

INPUT expects the rate of acquisitions, mergers and reorganisations to continue into the 1990s, in what is a very dynamic and fast-changing industry. Exhibit III- 2 details acquisitions, mergers and changes made through mid-1989.

EXHIBIT III-2

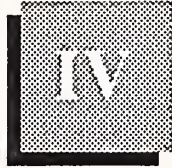
Acquisitions, Mergers and Changes in European Independent Maintenance Companies, 1988-1989

Country	Company	Acquired/Acquirer/Change
France	Granada Thomainfor MIS Spectral Sorbus	Acquired Intersystem and Infomat Acquired Control Data TPM business in Europe Acquired by Concept (an SSII) Acquired by Concept (an SSII) Acquired Premium Computer Services
Germany	Areatech Awitex Granada	Acquired LS Computer GmbH Acquired Tekserv's Digital Customer base Acquired Wigo
Italy	CEISSE Restore Sorbus	Olivetti raised shareholding to 100% Sold Sicilian branch Acquired unnamed IBM service company
Holland	Geveke Geveke Geveke Circle I.S.	Acquired Datex Systems in Holland Acquired EVTS in Belgium Acquired XTEC in Holland Philips raised shareholding—50% to 100%
Spain	Morsa/Eltec	Will merge interests, become Eltec in 1990
Sweden	Telub Telub 3C's Databolim Databolim	Acquired MBB Norge Norway Acquired Tekserv Sweden Merged into Ericsson Acquired Lodav (PC/Network vendor) Acquired Danasystems (SW package vendor)
United Kingdom	ATM DDT Meridian Quest Systems Reliability Systems Reliability Systems Reliability Systems Reliability Vistec Vistec Granada	Acquired PHASE—An FPM company Acquired by Apricot Management buyout, becomes ITM Acquired by Erskine House Acquired Enterprise, IBM Systems Co. Acquired Chase Acquired Fletcher Denis, IBM dealer Acquired Essex & City, IBM dealer Acquired 01 Computers, IBM Systems House Acquired National Computer Supplies Acquired DPCE, CFM and Mainstay



Western European Independent Maintenance Market Analysis





Western European Independent Maintenance Market Analysis

This chapter contains INPUT's analysis of the European independent maintenance market. Section A provides an overall summary for Western Europe; Sections B through I provide analyses of individual country markets.

A

European Independent Maintenance Market Analysis

The forecast is based on an assessment of the total independent maintenance market for 1988 and covers the five-year period from 1989 to 1994. These forecasts are an assessment of end-user expenditures on independent maintenance services.

Forecasts are made in local currencies and converted to U.S. dollars for aggregation and comparative purposes. Additionally, the forecasts, in keeping with INPUT's standard practice, are expressed in current (1989) currencies and therefore include inflation.

Exhibit IV-1 lists the U.S. dollar conversion rates used for calculating a consolidated European total for the Western European independent maintenance market and the inflation rate assumptions made by INPUT.

EXHIBIT IV-1

U.S. Dollar Conversion Rates and Inflation Rate Assumptions

Country	Currency	Exchange Rate	Inflation
Austria	AS	13.6	+2.8
Belgium	BF	40.5	+3.0
France	FF	6.55	+3.5
Italy	Lira	1409	+6.5
Netherlands	Dfl	2.18	+1.1
United Kingdom	£	0.61	+7.7
Spain	PTA	121	+6.3
Sweden	SK	6.55	+7.0
West Germany	DM	1.93	+3.0

Source: IMF (Average rates for second quarter 1989)

1. Market Size and Growth

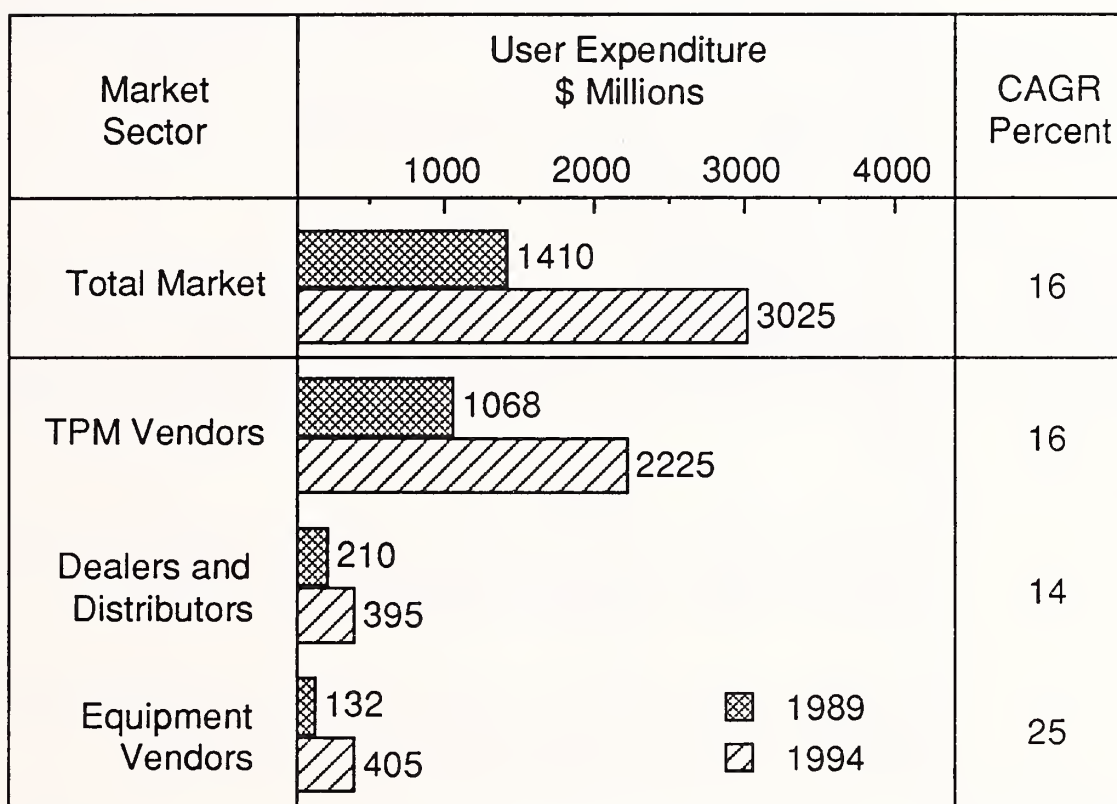
Forecasts for the overall Western European independent maintenance market are shown in Exhibit IV-2. This exhibit also shows INPUT's forecasts for the three sectors of the market.

- Third-party maintenance
- Dealers and distributors
- Equipment vendors

Market size in 1989 is estimated at \$1,410 million. This figure indicates that independent maintenance represents a 12% share of the overall customer services market, which was forecast by INPUT as reaching \$11,500 million in 1989 (forecast made in 1988). Independent maintenance, an activity that is primarily hardware maintenance oriented, represents a market share of 15% relative to the hardware maintenance sector of the customer services market. This sector of the customer services market was estimated to reach \$9355 million in INPUT's 1988 forecast for 1989.

EXHIBIT IV-2

West European Independent Maintenance Market Forecast 1989-1994



Note: Numbers are rounded.

1988 = \$1,175

The independent maintenance market is defined by INPUT as comprising three segments. Market share as a proportion of the total Western Europe hardware maintenance market, for each of these segments, is estimated as follows

- Third-party maintenance, 11.5%
- Dealers and distributors, 2.0%
- Equipment vendors, 1.5%

Growth of independent maintenance is forecast at 16% over the forecast period 1989 to 1994. Because independent maintenance is primarily a hardware maintenance activity, this level of growth is about three times higher than the forecast for the hardware maintenance sector of the customer services market. The impact of this level of growth is that by 1994 independent maintenance will account for about 26% of the hardware maintenance market and 18% of the overall customer services market.

Factors responsible for stimulating relatively high growth rates for independent maintenance are as follows:

- User preference for single-source services. Service of multivendor sites by one service vendor, by definition, shifts responsibility for service away from individual equipment vendors. INPUT user research indicated that in 1988 preference for single-source service was expressed by almost 70% of users, and in 1989 this figure increased to 80%.
- Increasing trends towards multivendor sites are enhancing single-source service opportunities.
- Increasing trends for computer equipment to be supplied through third-party channels such as VARs and distributors, particularly smaller computer systems. Third-party channels will tend to support and maintain the products they sell; one example is provided by IBM's approach, in which dealers are required to support the products they sell.
- Emergence of large TPM companies such as Granada and Thomainfor, the result of which is to enhance the credibility of TPM as an acceptable alternative to equipment vendors' service.

Although the growth rate of independent maintenance is relatively high compared with growth of the total hardware maintenance market, a number of constraining factors also exist:

- Computer systems are becoming more reliable and involve lower levels of user expenditure on service. A recent example in the U.K. suggested an estimated 75% reduction of service costs on the IBM AS 400 compared to the older S36.
- Smaller computer systems, particularly those that are PC-based, are seen by users to be sufficiently reliable not to require a formal service contract. Recent discussions with equipment vendors suggested that up to 60% of PCs are sold in situations where the user does not purchase a service contract.
- Some users will continue to be resistant to independent maintenance, and will insist that service be provided by the original equipment vendor.
- Some country markets are more resistant to the development of the TPM segment. An example is the German market.

2. Market Environment

Exhibit IV-3 provides a breakdown of the Western European market by country market sector.

EXHIBIT IV-3

West European Independent Maintenance Market Forecast by Country, 1988-1994

Country	U.S. Dollars Millions				
	1988	1989	Growth 1988-1989 (Percent)	1994	Growth 1989-1994 (Percent)
Austria	15	20	31	60	24
Belgium	31	38	25	90	19
France	230	275	20	600	17
Italy	100	117	18	265	18
Netherlands	82	97	19	200	16
Sweden	48	54	11	85	9
Spain	45	59	33	205	28
U.K.	413	508	23	1,080	16
West Germany	126	147	16	290	15
Rest of Europe	85	95	11	150	10
Total	1,175	1,410	20	3,025	16

Note: Numbers are rounded.

The market is dominated by the major country markets, France, Italy, the United Kingdom, and West Germany. Almost 75% of the Western European independent maintenance market is accounted for by user expenditures in these four countries in 1989. This percentage is forecast to remain relatively constant over the 1989-1994 forecast period.

The market in the United Kingdom is the most developed, representing 36% of the total. France and West Germany follow at around 20% and 10% respectively. Highest growth is forecast for the market in Spain (28%). High growth is consistent with the fact that the Spanish market is also experiencing the highest European growth in computer product sales.

A number of characteristics and competitive factors are influencing the independent maintenance market in Western Europe, and in overall context these factors can be summarised as follows:

- The emergence of large Pan-European TPM companies such as Granada, Thomainfor and Sorbus
- Implementation by equipment vendors of single-source or multivendor service strategies. INPUT vendor research indicates that almost 90% of equipment vendors currently have or are planning single-source service offerings.
- Merger and acquisition activity among TPM companies
- Equipment vendors' service and discounting policies
- Extended warranties. INPUT vendor research indicates that generally computer system warranties are tending towards one year and that warranties in the PC/workstation market will likely be between one and three years.
- Ownership of TPM companies by equipment vendors, examples of which are Olivetti (Ibimaint and Ciesse) and Philips (Circle Information Systems)
- TPM companies diversifying into other areas of activity, for example selling computer equipment that will be serviced by the TPM companies themselves

B

France

1. Market Size and Growth

Exhibit VI-4 shows the overall forecast for the independent maintenance market in France. The overall growth forecast for the French market, at 17% CAGR, is similar to that projected for the total European market (16% CAGR).

Exhibit IV-5 shows the market forecast for each of the three segments defined by INPUT. Total market size in 1989 is estimated at FF 1805 million (\$275 million). This figure indicates that the market in France accounts for 20% of the total independent maintenance market in Western Europe. With growth forecast to be similar to that for Europe over-

EXHIBIT IV-4

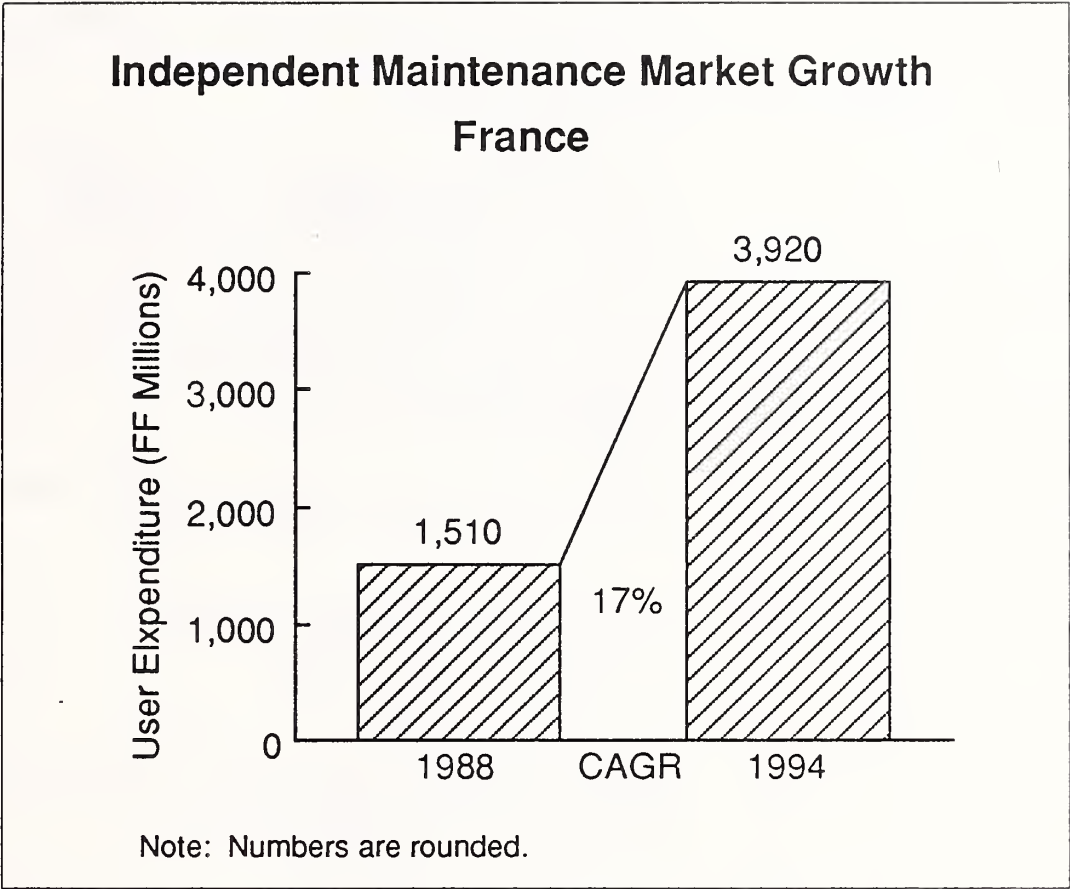


EXHIBIT IV-5

Independent Maintenance Market Forecast—France								
	FF Millions							
	1988	1989	1990	1991	1992	1993	1994	CAGR %
TPM Vendors	1,290	1,550	1,830	2,150	2,500	2,880	3,310	17
Dealers & Distributors	160	180	200	220	240	270	300	11
Equipment Vendors	60	75	100	130	170	225	310	32
Total	1,510	1,805	2,130	2,500	2,910	3,375	3,920	17
Annual Growth (%)	N/A	20	18	17	16	16	16	N/A

Note: Numbers are rounded.

all, the market share will remain consistent over the forecast period 1989 to 1994, at the end of which the market will reach almost FF 4000 million (\$600 million).

Penetration of the customer services market in France by independent maintenance is estimated at around 12% in 1989 and is projected to increase to 19% in 1994. These figures are similar to the overall average for Europe. Increased market share is a consequence of the independent maintenance market's growing at 17% CAGR, compared with the customer services market, which was forecast to grow at 8% CAGR in France by INPUT in 1988.

Market share of the three individual segments of the independent maintenance market in 1989 is estimated at:

- Third-party maintenance, 11.5%
- Dealers and distributors, 1.0%
- Equipment vendors, 0.5%

Over the forecast period the equipment vendors are expected to increase market share by a factor of three—to almost 1.5%—as a result of multivendor or single-source offerings.

2. Market Environment

a. Market Structure

INPUT estimates that in excess of forty TPM companies are operating within France, with about fifteen of these companies having 1988 revenues in excess of FF 15 million (\$2 million approximately).

Exhibit IV-6 lists the leading 15 TPM vendors in France. These vendors account for about 80% of the 1988 independent maintenance revenues in the French market; the leading five vendors account for 40% of revenues. The five leading TPM vendors in France, based in 1988 revenues, were:

- Granada
- Metroservice
- Control Data
- Spectral
- MIS and CGEE (tie)

The major proportion of independent maintenance revenues in France are derived from the servicing of equipment manufactured by IBM and Digital; this proportion of revenue is estimated at around 50%.

EXHIBIT IV-6

Leading TPM Vendors in France Ranked by 1988 Revenues

Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	FF Millions			
Granada	150	-	-	25
Metroservice	140	N/A	150	20
Control Data	135	-	140	6
Spectral (1)	125	220	160	45
MIS (1)	110	-	200	38
CGEE (ATEMI)	110	N/A	250	22
Thomainfor (2)	100	280 (2)	250	40
ECS	90	110	120	23
Tekserv	55	70	57	5
AMTI	50	-	110	20
Econocom	50	-	55	8
Sorbus	45	70	60	11
Alpha DIS	28	55	30	8
TASK	24	70	40	14
CSEE	15	20	30	14

Note: (1) Spectral and MIS acquired by Concept.
 (2) In June 1989 Thomainfor acquired the European TPM business of Control Data.

b. Market Characteristics and Competition

Merger and acquisition activity has played a major role in the French independent maintenance market during 1989.

- In June 1989 Thomainfor, a wholly owned subsidiary of Thompson CSF, acquired the European TPM business of Control Data, which had a reported \$35 million in revenue throughout Western Europe. This acquisition will likely contribute to Thomainfor's becoming the TPM market leader in France in 1989. In October 1989, Thomainfor also acquired two European subsidiaries of MAI Basic Four—Tekserv France and Tekserv Belgium. Resulting from these acquisitions Thomainfor has become a pan-European operation with plans to achieve critical mass in the countries where it now has operations. Further acquisitions should be anticipated.
- In January 1989, Concept, a leading company in the banking and financial sector of the software and services market, acquired MIS and Spectral in France. These companies were leaders in the TPM market segment in France and were acquired as part of a strategy by Concept to offer total-solution service. The combined revenues of MIS and Spectral were FF 235 million (\$36 million) in 1988; the result of the acquisition is to elevate Concept to the position of being the second largest provider of third-party maintenance services in France in 1989.
- As a result of acquisitions by Concept and Thomainfor, Granada, the previous leading TPM company in France, is relegated to occupying the number-three position in the market. However, based on history, further acquisitions by Granada are a possibility.

One result of recent merger and acquisition activity is the fact that the three largest TPMs in France now account for almost 40% of independent maintenance market revenues. A further result is that competitive elements are removed from the market by merging the activities of companies that would previously have been competing against each other.

Increased size of TPM companies, such as the three referred to previously, enhances the credibility of third-party maintenance to provide an alternative to equipment vendor service. From the users' point of view, company size can enhance the perception of financial stability and long-term viability of a TPM company. Thomainfor has an added credibility advantage by being part of the large, well-known French company, Thompson CSF access to support and the financial resources of Thompson CSF, allows competing with equipment vendors on more equal terms.

Entry of equipment vendors with single-source service offerings will likely be a primary source of competition to TPM companies, with the

competitive edge being biased in favour of the equipment vendors. User research indicates that 90% of users who express preference for single-source service would prefer that service be provided by one of their equipment vendors.

C
Italy

1. Market Size and Growth

Exhibit IV-7 shows the overall forecast for the independent maintenance market in Italy. The growth forecast for the period 1988 to 1994 is higher than that forecast for Western Europe overall—18% CAGR compared with 16%. This growth forecast is a reflection on Italy’s being the second largest growth market for computer products in Europe.

EXHIBIT IV-7

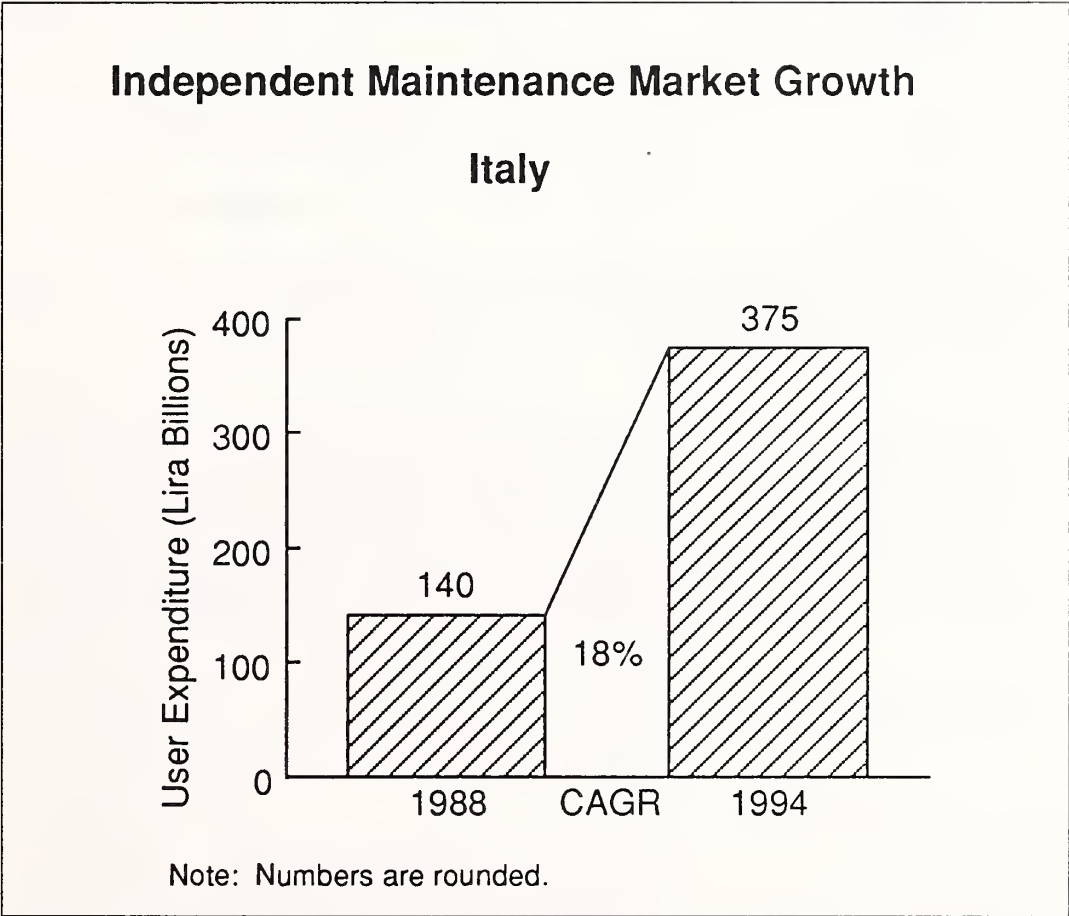


Exhibit IV-8 provides a more detailed forecast for the total market in Italy and the three segments defined by INPUT. Total market size in 1989 is estimated at Lira 165 billion (\$117 million), with the Italian market representing around one quarter of that in the U.K. (\$508 million) and just under half that in France (\$275 million).

The market for independent maintenance in Italy represents around 8% of the total market in Europe in 1989. The market will increase slightly to 9% in 1994, at which point the Italian market will reach a value of Lira 375 billion (\$266 million).

EXHIBIT IV-8

Independent Maintenance Market Forecast—Italy

	Lira Billions							CAGR %
	1988	1989	1990	1991	1992	1993	1994	
TPM Vendors	98	117	135	155	180	205	230	16
Dealers and Distributors	40	45	55	65	75	90	105	17
Equipment Vendors	2	3	5	8	15	25	40	65
Total	140	165	195	228	270	320	375	18
Annual Growth (%)	N/A	20	18	18	18	18	17	N/A

Note: Numbers are rounded.

Penetration of the customer services market by independent maintenance in 1989 is estimated at 8%. This figure compares with 25% in the U.K. and 12% in France, based on INPUT's 1988 forecasts for the customer services market. Market penetration of independent maintenance in Italy will increase to about 10% by 1994, when the market will reach Lira 375 billion (\$266 million). In 1988 INPUT forecast that the customer services market in Italy would grow at 15% CAGR.

The three segments identified by INPUT had the following shares of the independent maintenance market in Italy:

- Third-party maintenance, 6%
- Dealers and distributors, 2%
- Equipment vendors, (negligible)

Driving forces stimulating the growth of independent maintenance in the Italian market are:

- The market is relatively underdeveloped at present compared with the market in the U.K. and France; thus INPUT sees opportunities for further development.

- The equipment vendors' segment of the market represents the highest growth opportunity and is forecast to grow at 65% CAGR between 1989 and 1994. The reason for this rapid growth is that only five TPM companies have achieved reasonable size (over \$2 million). Other companies are relatively small, and therefore the equipment vendors are better positioned to take advantage of a developing market.

Factors inhibiting growth in the Italian independent maintenance market are:

- Potential growth in the TPM segment is limited by a lack of companies having sufficient size to take advantage of the opportunities available.
- Equipment vendors are forecast to achieve high growth (65% CAGR), but limited market share constrains the overall impact this growth can achieve.

2. Market Environment

a. Market Structure

INPUT estimates that up to 30 TPM companies are operating in Italy, but 60% to 65% of these companies are relatively small, with revenues less than 1 billion Lira (\$0.7 million).

Exhibit IV-9 lists the seven leading Italian TPM vendors identified by INPUT. The top five of these vendors account for 50% of the independent maintenance revenues in the Italian market in 1988; dealers and distributors account for a further 30%. More significantly, two TPM vendors—Ibimaint and Ciesse—accounted for almost 35% of revenues, and both these companies are owned by Olivetti.

The leading five TPM companies in Italy based on 1988 revenues are:

- Ibimaint
- Ciesse
- Granada
- Sorbus
- Econocom

EXHIBIT IV-9

Leading TPM Vendors in Italy Ranked by 1988 Revenues				
Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	Lira Billions			
Ibimaint	37.0	47.0	280	28
Ciesse	11.8	15.0	85	29
Granada	9.3	-	-	5
Sorbus	6.5	N/A	50 (1)	11
Econocom	5.5	6.5	35	3
Restore	1.0	1.0	3	1
Inside	0.3	0.4	4	1

b. Market Characteristics and Competition

There is no evidence of any significant merger and acquisition activity in the Italian TPM market. Minor changes are:

- Olivetti increased its shareholding in Ciesse from 60% to 100% in late 1988.
- Sorbus acquired a small Italian service company.
- Restore has sold its branch in Sicily and thus limited TPM activities to Northern Italy.

The dominance of Ibimaint and Ciesse is a significant characteristic of the Italian TPM market, both companies are owned by Olivetti. The independent maintenance market in Italy is characterised by the following factors:

- The TPM sector is dominated by Ibimaint and Ciesse, both owned by Olivetti. The two TPM companies account for about 50% of the TPM sector revenues.

- No other TPM company has yet achieved a position of relative significance.
- Entry of the equipment vendors with multivendor or single-source offerings has commenced, but equipment vendors as yet have achieved a negligible market penetration.
- In its current relatively undeveloped state, the market would appear to offer opportunities for growth.

TPM vendor comments related to the competitive environment in the Italian independent maintenance market are listed in Exhibit IV-10.

EXHIBIT IV-10

The Italian Competitive Environment TPM Vendor Comments

- Price is no longer an issue.
- Flexibility is the most important factor.
- Users' fear of leaving a strong structure constrains TPM development.
- Manufacturers are reacting.
- Sufficient opportunity exists provided prices are not forced down.
- The major source of competition is from other TPM vendors.

These comments can be summarised as follows:

- Price may not be an issue at the present time, but a degree of concern exists that increased competition may force prices downwards.
- TPM vendors recognise that the equipment vendors are poised to become a competitive element with single-source service offerings.

- TPM vendors recognise that users are resistant to moving away from the security of equipment vendor service. This resistance is most likely due to the lack of substantial TPM companies and suggests a credibility factor.
- TPM vendors do not at the present time view the equipment vendors or the dealers and distributors as a source of competition.

The two most commonly quoted sources of competition were Ibimaint and Ciesse (both companies considered the other to be a competitive source). Although both Ibimaint and Ciesse are owned by Olivetti, it appears that they are permitted to compete against each other as each tends to operate with a relatively high degree of autonomy.

TPM vendors indicated a degree of concern relative to extended warranties on computer equipment. One example related to the IBM Entry Systems Service Amendment (ESSA), which provides up to five years' maintenance coverage on the recently introduced AS 400 minicomputer—a natural growth path for users of the S36 and S38.

D

The Netherlands

1 . Market Size and Growth

Forecasts for the independent maintenance market in the Netherlands are shown in Exhibit IV-11. The market growth forecast for the period 1988 to 1994 matches that forecast for the overall Western European market at 16% CAGR.

EXHIBIT IV-11

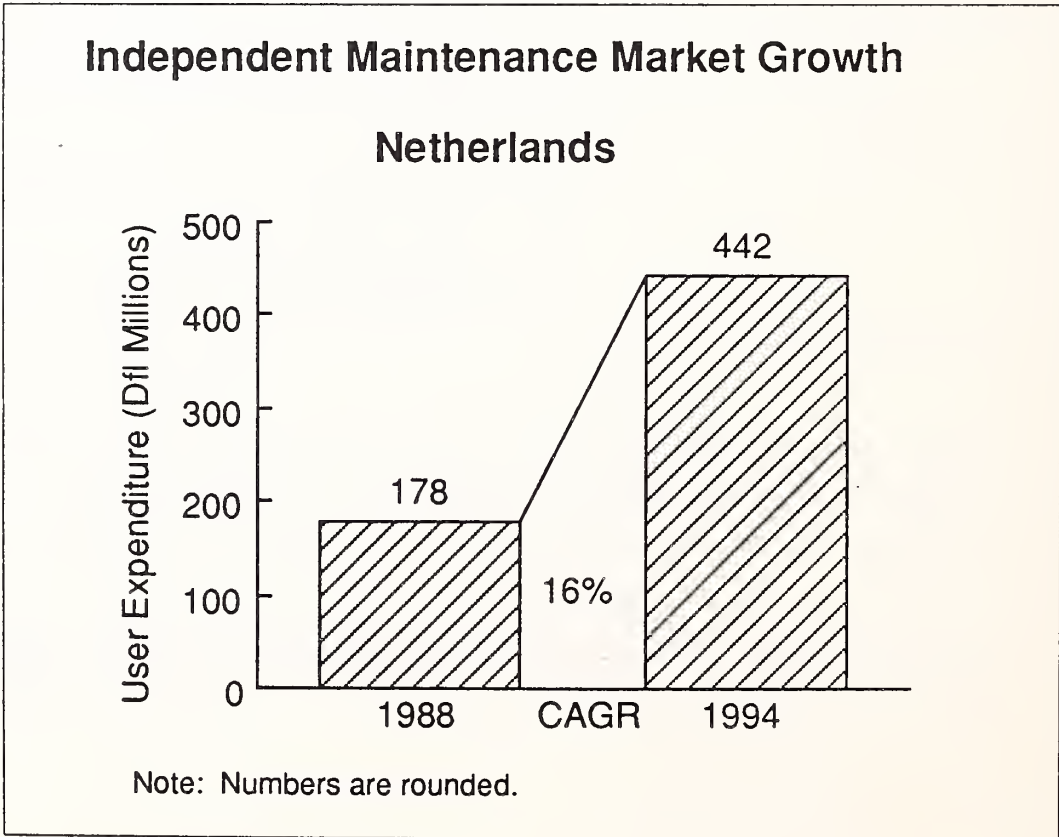


Exhibit IV-12 provides a more-detailed forecast for the independent maintenance market in the Netherlands and also provides a breakdown for each of the three market segments defined by INPUT. The total market size in 1989 is estimated at Dfl 212 million (\$97 million). This figure represents about 7% of the total European market for independent maintenance. A growth rate matching that forecast for the total European market indicates market share remaining constant over the period 1989 to 1994, at the end of which the market is projected to reach Dfl 442 million (\$ 203 million).

EXHIBIT IV-12

Independent Maintenance Market Forecast—Netherlands

	Dfl Millions							CAGR %
	1988	1989	1990	1991	1992	1993	1994	
TPM Vendors	165	195	225	260	295	335	380	15
Dealers and Distributors	13	15	17	19	21	25	27	13
Hardware Manufacturers	-	2	3	6	11	20	35	80
Total	178	212	245	285	327	380	442	16
Annual Growth (%)	N/A	19	17	16	16	16	15	N/A

Note: Numbers are rounded.

Penetration of the customer services market by independent maintenance in the Netherlands is estimated at 18% in 1989, compared with the U.K. at 25% and France at 12%. Market penetration will increase towards 27% in 1994, based on INPUT's 1988 forecast for the customer service market in the Netherlands, which was projected to grow at 6% CAGR.

The 1989 market share of the three segments of the independent maintenance market in the Netherlands, as defined by INPUT, is estimated at:

- Third-party maintenance, 17%
- Dealers and distributors, 1%
- Equipment vendors, negligible

Driving forces stimulating the growth of independent maintenance in the Netherlands are:

- Third-party maintenance is relatively well-established and seen as a viable alternative to equipment vendor maintenance by some users.
- The equipment vendors' segment of the market represents the highest growth opportunity and is forecast to grow at 80% CAGR over the period 1989 to 1994. The presence of very large multivendor sites—due to concentrations of specific sectors of industry (for example, petrochemicals)—will provide opportunities for equipment vendors in market sectors likely to be inaccessible to TPM companies.

Factors inhibiting the growth of independent maintenance in the Netherlands are:

- INPUT projects below-average growth of the customer services market, which is forecast to grow at 6% CAGR, compared with 8% CAGR overall for Western Europe.
- TPM companies have been limited in gaining access to large industrial sites where critical (and dangerous) processes are undertaken.
- The market is at a relatively advanced stage of development, independent maintenance having achieved an 18% share of the customer services market.

2. Market Environment

a. Market Structure

INPUT estimates that between 15 and 20 TPM companies are operating in the Netherlands. Exhibit IV-13 lists the leading companies.

The leading five TPM vendors represented about 70% of the independent maintenance market revenues in 1988. The remaining companies tend to have revenues less than Dfl 2.0 million (\$ 0.9 million) and represent approximately 70% of the TPM vendors operating in the Netherlands. Market leader was Geveke (renamed Getronics service in July 1989), which had revenues of Dfl 50 million (\$23 million) and a market share of almost 30%.

Dutch TPM companies claimed that the primary source of service revenues was servicing equipment manufactured by IBM, Digital, and a variety of PCs.

EXHIBIT IV-13

Leading TPM Vendors in the Netherlands Ranked by 1988 Revenues

Company	1988 Revenues	1989 Forecast Revenue	Number of Engineers	Number of Service Centres
	Dfl Millions ^S			
Geveke (1)	50.0	65.0	240	6
DTC Service	25.0	30.0	45	1
Thyssen	20.0	23.0	38	1
Granada	20.0	-	-	1
Econocom	8.5	12.0	60	5
CIS	3.0	4.0 (1)	21	5

Notes (1) Geveke renamed Getronics Service
July 1989.

b. Market Characteristics and Competition

Merger and acquisition activity has been a relatively major characteristic of the TPM sector of the independent maintenance market in the Netherlands.

- In 1988 Granada acquired DPCE and Mainstay, an acquisition that included the operations of those companies in the Netherlands.
- Philips has increased its shareholding in Circle Information Systems from 50% to 100%.
- Geveke acquired two companies in the Netherlands (Datex Systems and XTEC) and EVTS in Belgium.

The independent maintenance market in the Netherlands contains a number of characteristic features.

- One company—the market leader, Geveke—represents a 30% market share of the TPM sector.

- The Netherlands contains a number of large multivendor sites involved in critical activities such as petrochemicals. TPM companies likely find these sites inaccessible due to the nature of applications in which the computer systems are involved.
- The equipment vendors are commencing implementation of single-source service offerings and are forecast to achieve high growth (80% CAGR) that will result in an estimated market share of almost 10 percent by 1994. Opportunities presented to equipment vendors, or at least to the larger companies, could be provided by the previously mentioned large multivendor sites.

TPM vendor comments relating to the competitive environment in the Netherlands can be summarised as follows:

- The vendor's ability to provide single-source service can be a key element.
- A degree of user conservatism is manifested as a prejudice against using third-party maintenance.
- Equipment vendors are reducing prices in an effort to recover or retain accounts.
- The effect of reducing equipment prices is impacting the viability of traditional on-site service, as opposed to depot repair.

In other words, the TPM vendors recognised that competition in the market was present but claimed that it was not yet severe. INPUT contends that competition will increase as the equipment vendors' single-source service strategies gather momentum and take advantage of user preferences for equipment vendor service. Previously any user committed to single-source service had little choice but to use a TPM company.

TPM vendors in the Netherlands have initiated involvement in additional activities aimed at reducing their reliance on equipment maintenance as a sole or major source of revenue. These activities fall within two main headings:

- The offering of non-maintenance-related services
- Diversification outside the strict confines of services

Examples of these maintenance activities are listed in Exhibits IV-14 and IV-15, together with an indication of the extent to which TPM interviewed vendors are involved.

EXHIBIT IV-14

Dutch TPM Vendors
Maintenance-Related Service Offerings

	Total Vendor Sample (Percentage)
System planning	100
Installation	100
Deinstallation	60
Disaster recovery	60
Application software support	40
Consultancy	100
User training on hardware	80
Preventative maintenance	100
System software support	100
System configuration	60

EXHIBIT IV-15

Dutch TPM Vendors
Diversification Activities

	Total Vendor Sample (Percentage)
Hardware sales	60
Application software sales	40
External training	80
Computer supplies	60

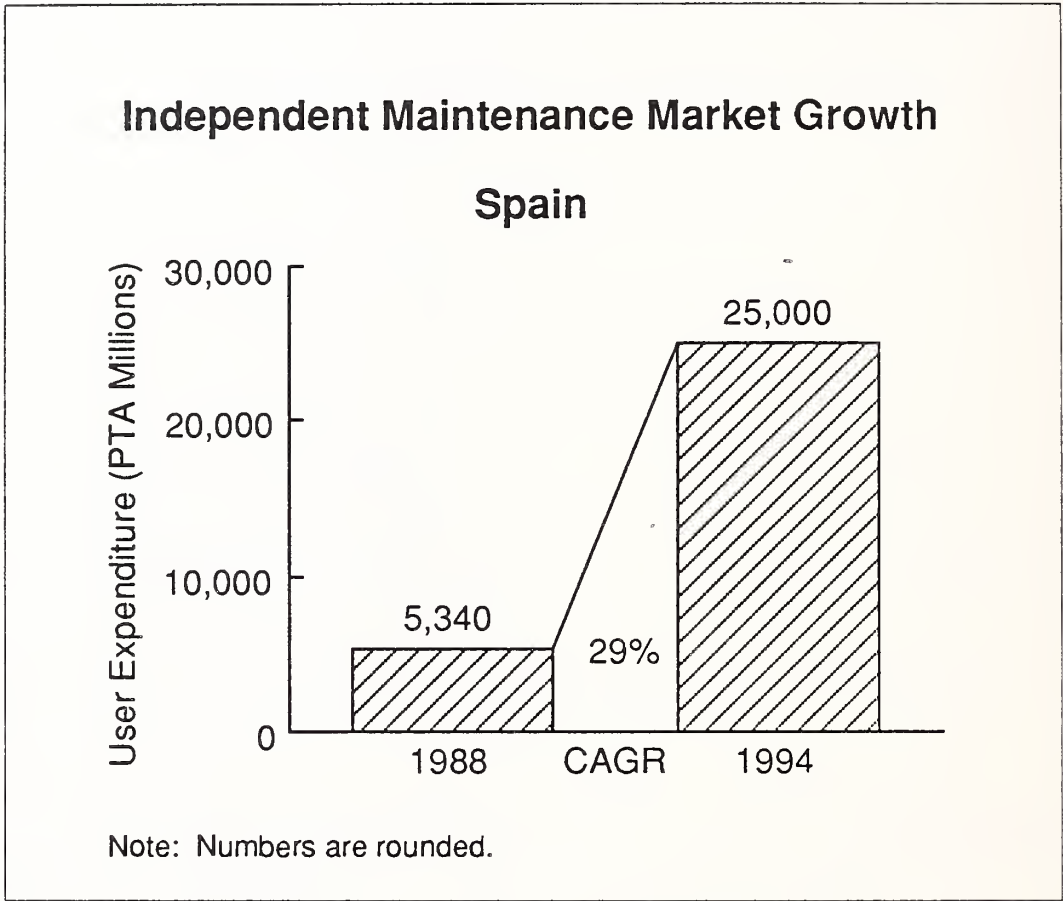
E

Spain

1. Market Size and Growth

Exhibit IV-16 shows the forecast for the independent maintenance market in Spain. The market growth forecast for the period 1988 to 1994 in Spain is higher than the forecast for the overall independent maintenance market in Europe—29% CAGR compared with 16% CAGR.

EXHIBIT IV-16



A more-detailed forecast is provided by Exhibit IV-17, which also provides a breakdown for each of the three market segments defined by INPUT. Total market size in 1989 in Spain is estimated at PTA 7,100 million (\$59 million). This figure represents about four percent of the total European market for independent maintenance. A higher-than-average forecast growth rate will increase this proportion of the total European market to almost seven percent by 1994, when the market is projected to reach PTA 25,000 million (\$207 million).

Penetration of the customer services market by independent maintenance in Spain is estimated to be around 11 percent in 1989. This penetration is similar to that achieved in the French market but lower than penetration levels achieved in the Netherlands and the U.K.—18 percent and 25 percent, respectively. Market penetration in Spain is forecast to increase to around 20 percent by 1994, based on INPUT's 1988 forecasts for the customer services market in Spain, which was projected to grow at 16 percent CAGR.

EXHIBIT IV-17

Independent Maintenance Market Forecast—Spain

	PTA Millions							
	1988	1989	1990	1991	1992	1993	1994	CAGR %
TPM Vendors	3,750	4,950	6,435	8,235	10,540	13,280	16,460	28
Dealers and Distributors	690	800	945	1,105	1,295	1,515	1,770	17
Hardware Manufacturers	900	1,350	1,960	2,840	3,975	5,165	6,770	40
Total	5,340	7,100	9,340	12,180	15,810	19,960	25,000	29
Annual Growth (%)	N/A	33	32	30	29	26	25	N/A

Note: Numbers are rounded.

The 1989 market share of the three segments of the independent maintenance markets, as defined by INPUT, is estimated at:

- Third-party maintenance, 8%
- Dealers and distributors, 1%
- Equipment vendors, 2%

Driving forces stimulating the growth of independent maintenance in the Spanish market are:

- The customer services market in Spain was forecast by INPUT in 1988 to grow at 16 percent CAGR over the period 1988 to 1993. This growth figure is twice that projected for the overall Western European customer services market—which was forecast by INPUT in 1988 to grow at eight percent CAGR. The reasons for these higher levels of projected growth are related to the Spanish market being the fastest growing market in Western Europe for computer products.
- Growth of independent maintenance in Spain is likely to benefit from the equipment vendors' single-source service offerings. Analysis of user data indicates user preference for equipment vendor single-source service.

Factors inhibiting the growth of independent maintenance in Spain are:

- Spain may be the fastest growing market in Europe for computer products, but the newest products (for example, the IBM AS 400) being installed require less maintenance. Therefore the hardware maintenance market will grow at a slower rate than the hardware products market.
- The TPM segment of the independent maintenance market at present does not appear to contain any relatively large TPM companies like Thomainfor in France and Granada in the U.K. The largest TPM companies in Spain have revenues of about \$8 million; the lack of large companies could inhibit growth due to the reduced base of TPM activity on which to build.

2. Market Environment

a. Market Structure

INPUT estimates that between 20 and 25 TPM companies are operating in Spain. The leading companies are listed in Exhibit IV-18.

EXHIBIT IV-18

Leading TPM Vendors in Spain Ranked by 1988 Revenues				
Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	PTA Millions			
Eltec/Morsa	1,000	1,500	160	24
Sintec	1,000	-	160	30
Granada	400	-	-	9
IPM	200	N/A	35	5
Cero Mantenimientos	200	N/A	20	4

The leading five TPM vendors represented around 75 percent of the TPM market in 1988. The remaining companies are estimated to have revenues of less than PTA 150 million (\$1.2 million) and represent approximately 75% of the TPM vendors operating within Spain. The two

leading TPM companies in Spain are Eltec/Morsa and Sintec, each having an estimated market share of around 25 percent.

b. Market Characteristics and Competition

Only one significant company merger has taken place in Spain in the last twelve months. That merger was of Eltec and Morsa, Eltec being the larger of the two companies. At present both company names are still used, but only the name of the parent company Eltec will be used starting in early 1990.

During discussions with TPM vendors throughout Europe, one vendor in the Netherlands indicated that a decision had been made by the company to set up operations in Spain in late 1989 or early 1990. Other vendors expressed an interest in the Spanish market based on the opportunities they felt were being offered.

Competition in the Spanish independent maintenance market is between TPM companies and equipment vendors. INPUT's forecasts indicate that the equipment vendors will have achieved a 27-percent market share by 1994, compared with 17 percent in 1988. Spanish TPM vendors did not claim any serious competition at present; although Granada is the third-largest TPM vendor in Spain, the company is considered by TPM vendors more in terms of potential competition than as a current competitor.

F

Sweden

1. Market Size and Growth

Forecasts for the independent maintenance market in Sweden are shown in Exhibit IV-19. The market growth forecast for the period 1989 to 1994 is lower than the forecast for the overall Western European market—9 percent compared with 16 percent.

Exhibit IV-20 provides a more-detailed forecast for the independent maintenance market in Sweden and also provides a breakdown of the three market segments defined by INPUT. The total market size in 1989 is estimated at SK 350 million (\$53 million). This figure represents about four percent of the total European market for independent maintenance. A lower-than-average growth rate forecast indicates that, as a percentage of the total European market, the Swedish market share will fall to just under three percent by 1994, at which time the market in Sweden is projected to have reached SK 545 million (\$83 million).

EXHIBIT IV-19

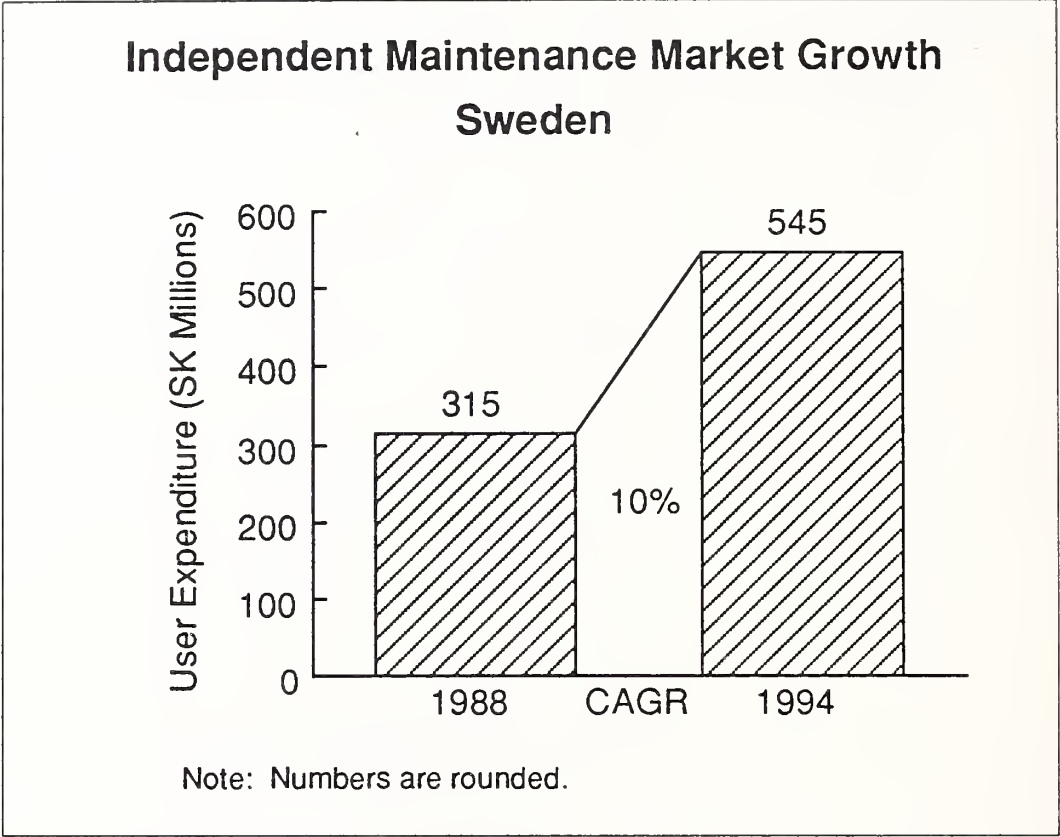


EXHIBIT IV-20

Independent Maintenance Market Forecast—Sweden								
	SK Millions							
	1988	1989	1990	1991	1992	1993	1994	CAGR %
TPM Vendors	225	250	275	300	320	340	355	8
Dealers and Distributors	90	100	110	122	132	145	160	10
Equipment Vendors	-	-	5	8	13	20	30	63
Total	315	350	390	430	465	505	545	10
Annual Growth (%)	N/A	12	11	11	9	8	8	N/A

Note: Numbers are rounded.

Penetration of the customer services market by independent maintenance in Sweden is estimated at around 13 percent in 1989, based on INPUT's 1988 forecast for the customer services market. This figure is slightly higher than the 12 percent achieved in France and the 11 percent achieved in Spain. Market penetration of the customer services market by independent maintenance will increase slightly by 1994 to around 15 percent during a period when the customer services market is growing at between 6 percent and 8 percent CAGR.

The 1989 market share of the three segments of the independent maintenance market, as defined by INPUT, is estimated as:

- Third-party maintenance, 9%
- Dealers and distributors, 4%
- Equipment vendors, nil

The growth of independent maintenance in Sweden is forecast to be the lowest of any country in Western Europe—9 percent CAGR, compared with the overall average figure for Europe of 16 percent. TPM vendor opinions concerning reasons for low growth of independent maintenance fall into two categories:

- User satisfaction with the level of service provided by equipment vendors
- The geographic nature of Sweden. Apart from defined centres of commerce and industry, other areas tend to be remote enough that the volume of business outside the main areas provides insufficient economic justification for TPM vendor centres. Access to these remote areas is difficult during winter months.

Growth in the equipment vendor segment of the independent maintenance market will likely be stimulated by two factors:

- User preference for equipment vendor single-source services
- High levels of user satisfaction with the service provided by the equipment vendors

2. Market Environment

a. Market Structure

INPUT estimates that between 10 and 15 TPM companies are operating in Sweden. The leading TPM companies are listed in Exhibit IV-21.

EXHIBIT IV-21

Leading TPM Vendors in Sweden Ranked by 1988 Revenues

Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	SK Millions			
Telub	100	120	100	17
Complete Computer Care	65	(1)	*100	*29
Granada	25	N/A	N/A	1
Databolim	15	18	115 (2)	17 (2)

Notes (1) Complete Computer Care is currently undergoing reorganisation—no data are available; * indicates 1988 data.
(2) Total figure, not just TPM.

The leading four TPM companies represented around 65 percent of the independent maintenance market revenues in 1988. The remaining companies are each estimated to have revenues of less than SK 5 million (\$0.76 million) and to represent 75% of the TPM vendors in Sweden. The market leader in Sweden is Telub, with revenues of SK 100 million (\$15 million) and a market share of around 30%.

The only major sources of TPM vendor diversification that emerged from interviews were:

- Telub is also offering fourth-party maintenance services and is one of the leading fourth-party maintenance vendors in Western Europe, with repair centres in Sweden and Germany.
- Databolim is now primarily a distributor of Hewlett-Packard computer systems.

b. Market Characteristics and Competition

There has been a moderate degree of merger and acquisition activity in Sweden.

- In 1988 the operations of DPCE were acquired by Granada, including DPCE operations in Sweden.
- Telub has acquired MBB Norge and Tekserv Sweden.
- Databolim has acquired Lodav, a PC and network vendor, and Danasystems, a software product vendor.
- Complete Computer Care (3Cs) has been merged into Ericsson. Reorganisation was still in progress at the time vendor interviews were being carried out.

The independent maintenance market in Sweden contains a number of characteristic features, the most important of which are:

- One company, the market leader, represents a 30-percent share in the TPM sector.
- The TPM market in Sweden is served by a small number of vendors, only four having any real significance.
- Involvement by the equipment vendors is currently very limited, but is due to expand over the next five years.
- Sweden, like other Scandinavian countries, has a relatively low density of computer systems, which tend to be concentrated around major centres, such as the capital, and otherwise scattered in remote regions.

Competition in the independent maintenance market in Sweden is mainly between the TPM vendors and the equipment vendors. This situation is likely to become more competitive as the equipment vendors implement single-source or multivendor service offerings. Due to the small number of TPM vendors, competition between them is limited. The largest TPM in Sweden, Telub, is state owned and a subsidiary of the FFV group, a factor that likely provides the company with an advantage over competitors when government contracts are being considered.

G

The United Kingdom 1. Market Size and Growth

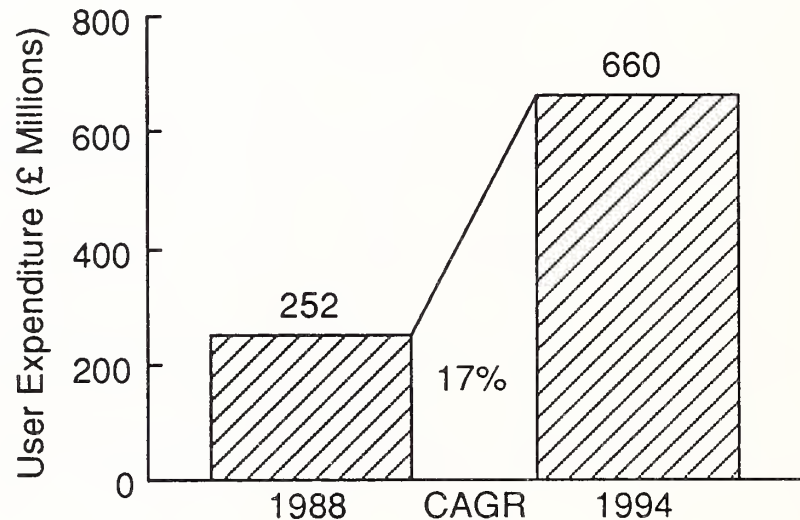
The forecast for the independent maintenance market in the United Kingdom is shown in Exhibit IV-22. The market growth forecast for the period 1988 to 1994 matches the forecast for the overall Western European independent maintenance market —16 percent CAGR.

Exhibit IV-23 provides a more-detailed forecast for the independent maintenance market in the U.K. and also provides a breakdown for each of the three market segments defined by INPUT. The total market size in 1989 is estimated at £310 million (\$508 million). This figure represents

around 35 percent of the total market in Western Europe for independent maintenance. The U.K. is the largest independent maintenance market in Europe, France is second largest at \$275 million, and West Germany third at \$126 million. Thus roughly a factor of two separates each of these three markets.

EXHIBIT IV-22

Independent Maintenance Market Growth U.K.



Note: Numbers are rounded.

EXHIBIT IV-23

Independent Maintenance Market Forecast—U.K.

	£ Millions							
	1988	1989	1990	1991	1992	1993	1994	CAGR %
TPM Vendors	195	235	275	325	380	440	500	17
Dealers and Distributors	17	20	22	25	30	35	40	15
Equipment Vendors	40	55	65	75	90	105	120	20
Total	252	310	362	425	500	580	660	17
Annual Growth (%)	N/A	23	18	17	17	16	14	N/A

Note: Numbers are rounded.

A projected 17 percent CAGR growth rate for the U.K. independent maintenance market, matching that overall within Europe, indicates that the U.K. percentage of the European market will remain relatively constant up to the end of the forecast period in 1994. At this time the U.K. market is estimated to reach £660 million (\$1.1 billion).

Penetration of the U.K. customer services market by independent maintenance in 1989 is estimated at 25 percent, the highest market penetration figure for any country market within Europe. Market penetration in the U.K. will increase towards 40 percent in 1994 as a consequence of the independent maintenance markets, growing at a faster rate than the overall customer services market—16 percent CAGR, compared with the 8% CAGR forecast by INPUT in 1988 for customer services market growth in the U.K.

The 1989 market share of the three segments of the independent maintenance market in the U.K., as defined by INPUT, is estimated at

- Third-party maintenance, 19%
- Dealers and distributors, 2%
- Equipment vendors, 4%

Driving forces stimulating the growth of independent maintenance in the U.K. are:

- The size of the leading TPM vendors, particularly Granada, has reached a level at which the leading companies have a high credibility factor and a high profile.
- Due to the existence of a large number of TPM companies in the U.K.—there are ten companies with revenues of more than £5.0 million (\$8 million)—users are well aware of the alternatives to equipment vendor service.
- A recent recommendation by the Central Computer and Telecommunications Agency (CCTA), a government organisation, suggested that all government computer maintenance contracts should be submitted to open tender.
- There is competition between equipment vendors and TPM companies, including against each other.

Factors inhibiting independent maintenance market growth in the U.K. are:

- Many users retain a conservative attitude and consider TPM a higher risk than service provided by equipment vendors.

- In a market as well developed as that in the U.K., the inability of TPM companies to provide software support can be a limiting factor, as can market share alone.

2. Market Environment

a. Market Structure

INPUT estimates that between 100 and 150 TPM companies are operating within the U.K.; Exhibit IV-24 lists the leading companies.

The leading five TPM vendors represent around 42 percent of the independent maintenance market based on 1988 revenues; the next fifteen TPM vendors account for a further 24 percent of revenues. The remaining 80 percent of companies account for 34 percent of market revenues and tend to be companies with revenues of £1 million (\$1.6 million) or less. Market leader in the U.K. is Granada, with revenues of £65 million (\$107 million) and a market share of about 25 percent.

The leading TPM companies identified by INPUT in the U.K., based on 1988 revenues, were:

- Granada
- Sorbus
- Extel
- Computeraid
- Data Logic

Third-party maintenance company revenue sources in the U.K. are derived mainly from the service of IBM and Digital computer systems. TPM companies claim overall that:

- Thirty percent of revenues are derived from servicing IBM equipment.
- Twenty percent of revenues are derived from servicing Digital equipment.
- The equipment of other major vendors, for example Unisys and ICL, each accounts for about one percent of TPM company revenues.

EXHIBIT IV-24

Leading TPM Vendors in the U.K. Ranked by 1988 Revenues

Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	£ Millions			
Granada	65.0	-	1200	35
Sorbus	13.5	-	N/A	8
Extel	12.0	-	N/A	13
Computeraid	10.0	12.00	220	14
Data Logic	7.6	7.10	147	7
DDT	7.2	-	190	10
Systems Reliability	7.0	9.00	130	13
Vistec	6.0	7.00	-	-
Quest	5.0	6.00	115	6
DCS	5.0	6.00	70	5
ITM (1)	4.5	4.50	10	2
KMS	4.2	-	80	16
ICM	4.0	5.50	70	7
ATM	3.1	4.00	75	10
Nelson	3.0	4.25	58	7
LTSS	3.0	5.50	55	6
Jaecrow	2.8	3.20	70	-
Sysmatic	2.4	3.60	50	5
MSM (2)	1.9	2.60	72	8
NSE	1.6	2.50	28	1
CRC	1.3	2.00	57	6
CES	1.0	1.25	18	18

Note: (1) Company resulted from a management buyout of Meridian Maintenance Business.

(2) Was Norbain; acquired by FKI Data Recording in July/August 1989 and renamed Newbury Data Maintenance.

U.K. TPM revenue sources derived from system size and industry sectors are listed in Exhibits IV-25 and IV-26.

EXHIBIT IV-25

Percentage of Revenues Derived from Market Sectors

U.K. TPM Vendors

	<u>Percent</u>
Mainframe maintenance	15
Minicomputer maintenance	25
PC maintenance	35
Peripheral maintenance	20
Other	5

EXHIBIT IV-26

Percentage of Revenues Derived from Industry Sectors

U.K. TPM Vendors

	<u>Percent</u>
Banking and finance	10
Manufacturing industry	35
Central government	5
Services	5
Public sector	15
Retail and distribution	20
Equipment manufacturers	10

b. Market Characteristics and Competition

During the last twelve to eighteen months there has been significant merger and acquisition activity among TPM vendors. The results have influenced not only the U.K. market but also other European country markets. The major activities are as follows:

- In January 1988 Granada acquired Mainstay, a specialist IBM GSD maintainer with operations in the U.K., Belgium and the Netherlands.
- In June 1988 Granada acquired DPCE, a large multinational TPM company.
- In December of 1988 Granada acquired WIGO in Germany.
- 1989 saw the acquisition of DDT by Apricot, a U.K. PC/workstation manufacturer.
- In mid-1989 the TPM activities of Meridien were subject to a management buyout in both the U.K. and France.

Unique characteristics of the U.K. independent maintenance market can be summarised as follows:

- Due to a planned and aggressive policy of acquisition, Granada has become the market leader not only in the U.K., but also in Western Europe. The company is currently three times larger than its nearest rival. Granada's strategy was to gain a position of leadership that was unlikely to be challenged.
- In being the most developed TPM market in Europe, the U.K. likely forms the pattern that development in other European countries will follow, at least for the major country markets.
- A large number of relatively large TPM companies are operating within the U.K. Ten companies have revenues of £5.0 million (\$8 million) or more.

Major sources of competition in the U.K. are between TPM companies and equipment vendors. Up to 90 percent of equipment vendors in the U.K. either have or are planning single-source service offerings and one, Olivetti, is pursuing an aggressive TPM strategy by means of accounts such as Barclays Banks and Marks and Spencer. In the PC/workstation sector of the market, TPM companies compete against each other. However, one result of the acquisitions made by Granada has been to remove competitive elements from the market; previously the companies acquired by Granada would have been competing against each other.

Dealers were also mentioned by TPM vendors as a source of competition.

Some TPM vendors in the U.K. are not solely reliant on third-party maintenance as a sole business. Exhibit IV-27 indicates the type of associated businesses with which TPM companies are aligned.

EXHIBIT IV-27

U.K. Respondent Breakdown by Association

	<u>Percent</u>
Purely independent maintenance companies	40
Associated with leasing companies	5
Associated with distribution or sales	40
Associated with software or systems houses	15

Within the U.K., TPM vendors have initiated involvement in additional activities aimed at reducing their reliance on equipment maintenance as a sole or major source of revenue. These activities fall within two main headings:

- The offering of maintenance-related services
- Diversification outside the strict confines of service

Examples of these nonmaintenance activities are listed in Exhibit IV-28 and IV-29, together with an indication of the extent to which the TPM vendors interviewed are involved.

EXHIBIT IV-28

U.K. TPM Vendors Maintenance-Related Service Offerings

	<u>Percent</u>
System planning	60
Installation	90
Deinstallation	85
Disaster recovery	25
Application software support	50
Consultancy	70
User training on hardware	75
Preventive maintenance	100
System software support	70
System configuration	70

EXHIBIT IV-29

U.K. TPM Vendors Diversification Activities

	<u>Percent</u>
Hardware sales	60
Application software sales	30
External training	50
Computer supplies	35

H

West Germany

1. Market Size and Growth

Exhibit IV-30 shows the forecast for the independent maintenance market in West Germany. The market growth forecast, at 15 percent CAGR, is slightly lower than that forecast for the overall Western European market (16 percent CAGR).

Exhibit IV-31 provides a more detailed forecast for the independent maintenance market in West Germany and also provides a breakdown for each of the three market segments defined by INPUT. The total market size in 1989 is estimated at DM 283 million (\$147 million), the figure representing around 10 percent of the overall market for independent maintenance in Western Europe. A forecast growth rate of slightly less than the overall European average, 15 percent CAGR compared with 16 percent, indicates that the market share will fall slightly over the period 1989 to 1994, at the end which time the West German market is projected to reach DM 560 million (\$290 million).

EXHIBIT IV-30

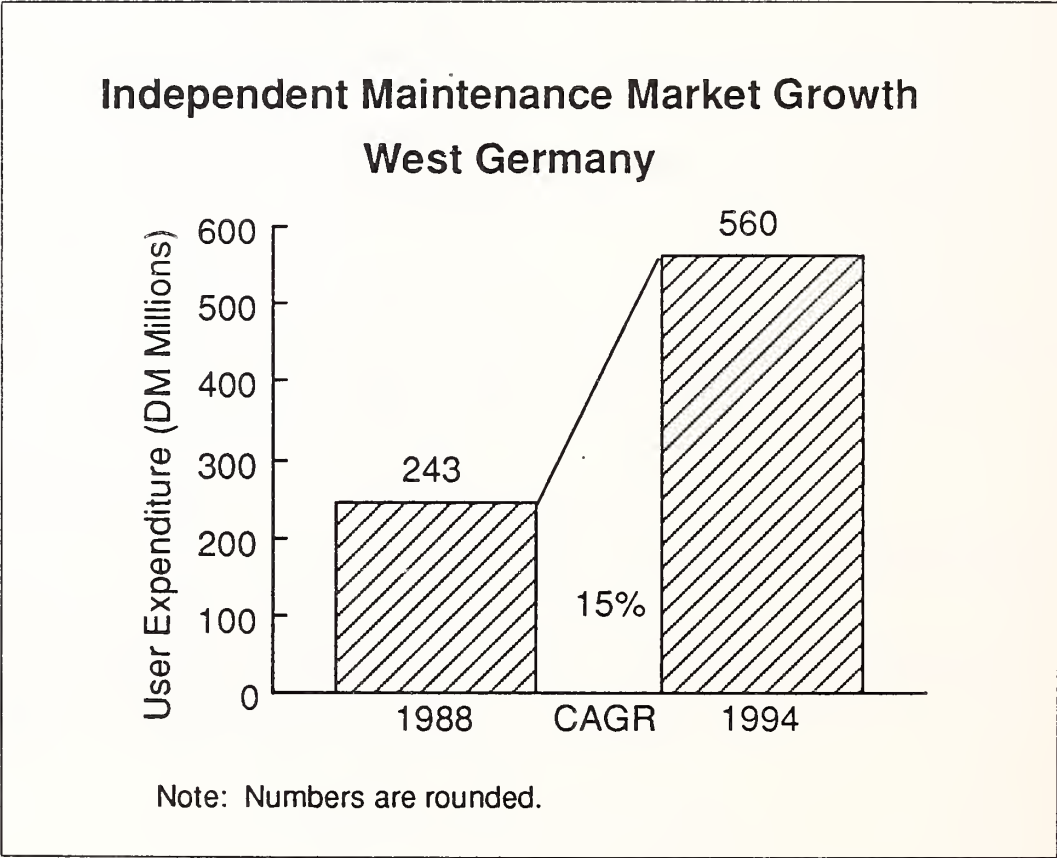


EXHIBIT IV-31

Independent Maintenance Market Forecast—West Germany

	DM Millions							CAGR %
	1988	1989	1990	1991	1992	1993	1994	
TPM Vendors	125	150	177	208	242	276	305	16
Dealers and Distributors	112	125	143	162	183	206	232	13
Hardware Manufacturers	6	8	10	12	15	18	23	25
Total	243	283	330	382	440	500	560	15
Annual Growth (%)	N/A	17	17	16	15	14	12	N/A

Note: Numbers are rounded.

Penetration of the customer services market by independent maintenance in West Germany is estimated at around six percent in 1989 based on forecasts for the customer services market made in 1988 by INPUT. This level of penetration is the lowest for any country market in Europe and indicates the degree of user resistance towards TPM in West Germany. Market penetration in West Germany will increase towards ten percent in 1994, based on INPUT's 1988 customer service market forecast, as a consequence of low overall growth in the customer services market—four percent CAGR compared with 16 percent CAGR for independent maintenance.

The 1989 market share of the three segments of the independent maintenance market, as defined by INPUT, is estimated at:

- Third-party maintenance, 3%
- Dealers and distributors, 3%
- Equipment vendors, negligible %

The major driving force stimulating the growth of independent maintenance in West Germany is that user resistance and conservatism towards third-party maintenance is softening. Also some of the TPM companies, such as Sorbus, are now becoming of such a size that the credibility of TPM as an alternative to equipment vendor service is increasing.

Factors inhibiting the growth of independent maintenance in West Germany can be summarised by the following TPM vendor concerns:

- User fear that equipment vendor support will be reduced if third-party maintenance is adopted.
- Users do not seem keen to take advantage of any reduced costs that may result from third-party maintenance.
- User management is sensitive to blame being apportioned if the TPM vendor is seen to be inefficient.

2. Market Environment

a. Market Structure

INPUT estimates that between 20 and 30 TPM companies are operating in West Germany. The leading companies are listed in Exhibit IV-32.

The leading five TPM vendors represented around 30 percent of the independent maintenance market based on 1988 revenues. Most of the remaining companies have revenues of less than DM 2 million (\$1 million) and represent around 50 percent of the TPM vendors (excluding those companies listed in Exhibit IV-32). Market leader in West Germany is Sorbus, with revenues of DM 30 million (\$16 million) and a market share of 12 percent.

The leading TPM vendors identified by INPUT in West Germany are:

- Sorbus
- Granada
- Econocom
- Multitech
- Telub Bitronic

German TPM vendors claim that a relatively high proportion of revenues are derived from serving IBM equipment, around 75 percent of revenues being derived from this source. A much lower percentage, 15 percent, was claimed by TPM vendors to be derived from the service of Digital Equipment. Revenue sources of TPM vendors identified by system size are listed in Exhibit IV-33.

EXHIBIT IV-32

Leading TPM Vendors in West Germany Ranked by 1988 Revenues				
Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	DM Millions			
Sorbus	30.0	39.0	110	6
Granada	20.0	-	-	25
Econocom	11.0	15.0	65	9
Multitech (1)	7.5	8.0	30	11
Telub Bitronic	6.6	8.5	67	6
Areatech	5.0	8.4	42	9
Tekserv	4.5	4.5	158	13
Awitex	4.0	5.5	42	9
Forum	2.5	3.0	14	2

Note: (1) Was XTEC.

EXHIBIT IV-33

Percentage of Revenues Derived from Market Sectors	
West German TPM Vendors	
	<u>Percent</u>
Mainframe maintenance	25
Minicomputer maintenance	40
PC maintenance	20
Peripheral maintenance	15

b. Market Characteristics and Competition

The following merger and acquisition activity has taken place within West Germany:

- Granada acquired Wigo in 1988 and merged Wigo with the previously acquired SMS operation in Germany.
- The part of Tekserv that services Digital equipment has been acquired by Awitex.
- Areatech has acquired LS Computer.

The major characteristic of the West German independent maintenance market is its relative lack of development. West Germany is the largest computer products market in Western Europe and also has the largest installed base of computer equipment. This lack of development is reflected in the relatively small numbers and small size of TPM companies compared with the size of the computer products market.

TPM vendors claim that their major source of competition is equipment vendors. Although some concern was expressed by TPM vendors related to equipment manufacturers' single-source service offerings, it appears that TPM vendors see single-source service offerings as an addition to the already dominant source of competition. Dealers and distributors were also claimed by TPM vendors to be a prominent source of competition at the local level, although competition was almost exclusively in the PC sector.

I

Other European Countries

1. Austria

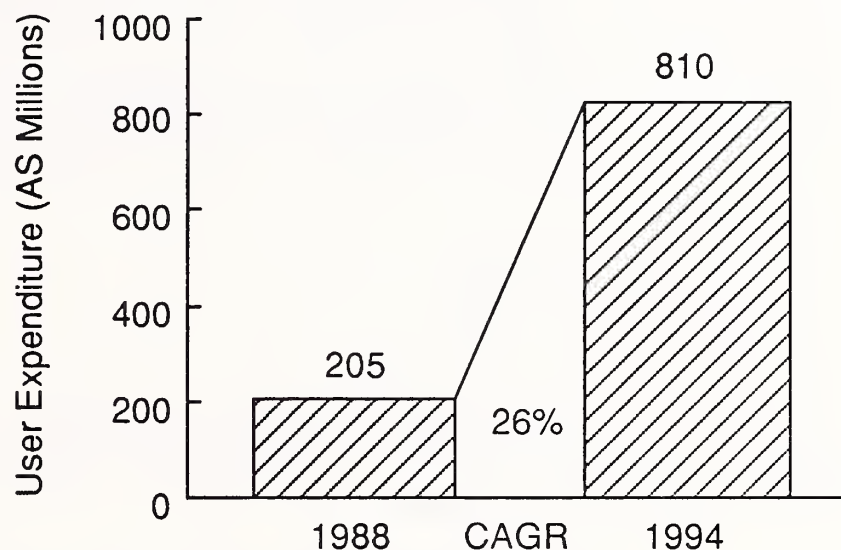
Forecasts for the independent maintenance market in Austria are shown in Exhibit IV-34. The market growth forecast of 26 percent CAGR between 1988 and 1994 is higher than the forecast for the overall Western European market (16 percent). Independent maintenance market growth is the second highest in Europe.

Exhibit IV-35 provides a more-detailed forecast for the independent maintenance market in Austria and also provides a breakdown for each of the three market segments defined by INPUT. The total market size in 1989 is estimated at AS 270 million (\$20 million), this figure representing around 1.5 percent of the total European market for independent maintenance. A forecast growth rate of 24 percent CAGR indicates that market share will increase to two percent in 1994, at which time the market is projected to reach AS 810 million (\$60 million).

EXHIBIT IV-34

Independent Maintenance Market Growth

Austria



Note: Numbers are rounded.

EXHIBIT IV-35

Independent Maintenance Market Forecast—Austria

	AS Millions							
	1988	1989	1990	1991	1992	1993	1994	CAGR %
TPM Vendors	150	200	275	355	450	550	600	26
Dealers and Distributors	55	60	70	75	85	95	110	12
Hardware Manufacturers	-	10	15	25	40	65	100	60
Total	205	270	360	455	575	710	810	26
Annual Growth (%)	N/A	32	32	26	26	24	15	N/A

Note: Numbers are rounded.

Penetration of the customer services market by independent maintenance in Austria is estimated at around eight percent in 1989, based on INPUT's 1988 forecasts for the customer services market. Market penetration will increase to around 16 percent in 1994 because independent maintenance will grow faster than the customer services market—24 percent compared with around 8 percent.

The larger proportion of independent maintenance revenues in Austria is represented by the TPM companies, the TPM segment having a market share of 74 percent in 1989. The largest TPM companies in Austria are:

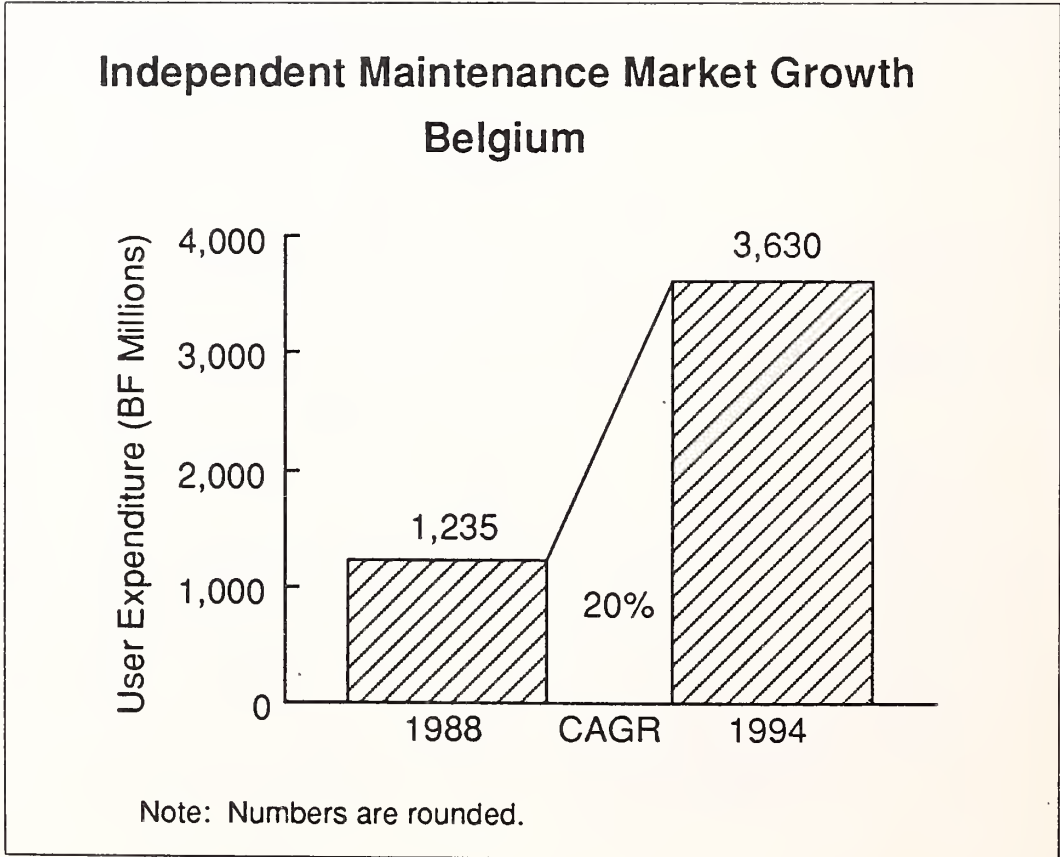
- S&S Elektronik & Computer Technik
- CDC
- Sorbus

Competition in the Austrian independent maintenance market is claimed to derive predominantly from equipment vendors.

2. Belgium

Forecasts for the Belgian independent maintenance market are shown in Exhibit IV-36. The market growth forecast for the Belgian market is higher than the forecast for the overall independent maintenance market in Europe—20 percent compared with 16 percent over the period 1988 to 1994.

EXHIBIT IV-36



A more-detailed forecast for the Belgian independent maintenance market is provided by Exhibit IV-37, which also provides a breakdown for the three market segments defined by INPUT. The total market size in 1989 is estimated at BF 1,545 million (\$38 million), this figure representing around 2.5 percent of the total European market for independent maintenance. A Belgian market growth rate forecast at 18 percent CAGR will increase the Belgian percentage of the total European market slightly to around three percent in 1994, at which time the market is projected to be BF 3,630 million (\$90 million).

EXHIBIT IV-37

Independent Maintenance Market Forecast—Belgium

	BF Millions							CAGR %
	1988	1989	1990	1991	1992	1993	1994	
TPM Vendors	1,025	1,230	1,450	1,715	1,985	2,265	2,500	16
Dealers and Distributors	210	240	275	310	355	405	460	14
Hardware Manufacturers	-	75	110	190	300	450	670	55
Total	1,235	1,545	1,835	2,215	2,640	3,120	3,630	20
Annual Growth (%)	N/A	25	20	20	19	18	16	N/A

Note: Numbers are rounded.

Penetration of the customer services market in Belgium by independent maintenance is estimated at 11 percent in 1989, based on INPUT's 1988 forecast for the customer services market. Market penetration will increase to approximately 17% in 1994 due to the independent maintenance market's growing at a faster rate than the customer services market, 19 percent compared to about 8 percent.

The majority of independent maintenance revenues in Belgium are from TPM companies, the TPM segment having a share of 80 percent in 1989. The largest TPM companies in Belgium are listed in Exhibit IV-38. The geographic positioning of Belgium has allowed a number of companies in adjacent countries to establish subsidiaries in Belgium, for example Geveke (now Getronics) and Tekserv (which was recently acquired by Thomainfor).

EXHIBIT IV-38

Leading TPM Vendors in Belgium Ranked by 1988 Revenues

Company	1988 Revenues	1989 Forecast Revenues	Number of Engineers	Number of Service Centres
	BF Millions			
Econocom	280.0	322.0	45	4
Geveke (1)(2)	148.0	204.0	50	3
Granada	N/A	N/A	N/A	4
Thyssen	74.0	107.0	13	1

Note: (1) Currency conversion by INPUT.

(2) Geveke was renamed Getronics Service in July 1989.

3. Rest of Europe

Independent maintenance activity in other European countries is, at present, limited. TPM is mainly provided by companies with subsidiaries in foreign countries. An example is Telub, a Swedish company with subsidiaries in Denmark (three service centres), Finland (six service centres) and Norway (five service centres).

One of the major reasons for limited development of independent maintenance in countries such as Finland, Norway and Portugal is the low concentration of computer users within these countries. One of the key factors that provide stimuli to set up maintenance operations is financial return on investment. If the setup costs are disproportionate to the revenue return, companies will be reluctant to invest. However, the establishment of multivendor sites could provide future encouragement.



Appendix: French TPM Vendor Profiles

COMPANY PROFILE

ALPHADIS

France
 141 - 143 Rue Du 1 Mai
 92000 Nanterre
 Country Code (33) Area Code (1)
 Number: 47 40 08 08

Company Information	Number of service centres:	8
	Number of employees in maintenance:	-
	Number of engineers:	30
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 28 million
	- 1989 Forecast:	FF 55 million

Type of equipment maintained

Mainframes:	IBM 43XX
Minicomputers:	IBM S34, S36, S38, Bull DPS 6, DPS 4
Business PCs:	IBM, Apple, Toshiba
Peripherals:	Telex, ITT, Memorex, STC
Other Equipment:	IBM, Memorex, Bull

Note: Acquired by DPM

COMPANY PROFILE

AMTI

France

6 Rue Emile-Reynaud

Tour Pariferic

93306 Aubervilliers

Country Code (33) Area Code (1)

Number: 48 39 86 10

Company Information

Number of service centres: 20

Number of employees in maintenance: -

Number of engineers: 110

- Field engineers: -

- Bench engineers: -

Revenues derived from maintenance

- 1988 Revenues: FF 50 Million

- 1989 Forecast:

Type of equipment maintained

Business PCs: All IBM PCs and compatibles, including Olivetti,
Logabax and associated peripherals

COMPANY PROFILE

CGEE (ATEMI)

France

11 Bis Avenue Gabriel Peri

BP 64

78360 Montesson

Country Code (33) Area Code (1)

Number: 34 80 89 98

Company Information	Number of service centres:	22
	Number of employees in maintenance:	-
	Number of engineers:	250
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 110 million
	- 1989 Forecast:	
	Type of equipment maintained	
	Almost all types of equipment are maintained	

COMPANY PROFILE

COGEC INFORMATIQUE

France

15 Rue des Granges Galand

BP 307

37553 St. Avertin Cedex

Country Code (33) Area Code (1)

Number: 47 28 40 38

Company Information	Number of service centres:	1
	Number of employees in maintenance:	-
	Number of engineers:	3
	- Field engineers:	-
	- Bench engineers:	-
Revenues derived from maintenance		
- 1988 Revenues:		
- 1989 Forecast:		
Type of equipment maintained		
Minicomputers: Altos, Wang		
Business PCs: All IBM-compatible, Altos, Wang, Epson		
Note: Main activity of company is equipment sales.		

COMPANY PROFILE

CONTROL DATA

France

27 Cours des Petites Ecuries

Lognes

Country Code (33) Area Code (1)

Number: 64 61 50 00

Company Information	Number of service centres:	6
	Number of employees in maintenance:	-
	Number of engineers:	140
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 135 million (see note)
	- 1989 Forecast:	

Type of equipment maintained

Mainframes:	IBM 43XX
Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM, Zenith, Compaq
Peripherals:	IBM, Zenith, Compaq

Note: The European TPM business of Control Data was acquired by Thomainfor of France in June/July 1989. Revenue stated is an INPUT estimate; the total European TPM revenues of Control Data in 1988 were \$35 million based on INPUT estimates.

COMPANY PROFILE

CSEE

France

6 Avenue des Tropiques

91120 Les Ulis

Country Code (33) Area Code (1)

Number: 69 07 78 01

Company Information

Number of service centres:	14
Number of employees in maintenance:	-
Number of engineers:	30
- Field engineers:	-
- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	FF 15 million
- 1989 Forecast:	FF 20 million

Type of equipment maintained

Other Equipment: EFTPOS terminals, ATMs—Ingenico, Crouzet, ESD, CSEE

Note: Main activity is maintenance of banking equipment and EFTPOS terminals due to the interests of the mother company in this sector.

COMPANY PROFILE

ECS MAINTENANCE

France

11-15 Allee des Vendanges

77200 Croissy Beaubourg

Country Code (33) Area Code (1)

Number: 60 06 73 82

Company Information

Number of service centres:	23
Number of employees in maintenance:	-
Number of engineers:	120
- Field engineers:	-
- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	FF 90 million
- 1989 Forecast:	FF 110 million

Type of equipment maintained

Mainframes:	IBM 308X, 43XX
Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM
Peripherals:	IBM

Note: Maintains only IBM machines. Not planning to include others for the time being.

COMPANY PROFILE

ECONOCOM MAINTENANCE

France

14 Rue Pergolese

75116 Paris

Country Code (33) Area Code (1)

Number: 47 56 37 00

Company Information	Number of service centres:	8
	Number of employees in maintenance:	-
	Number of engineers:	55
	- Field engineers:	-
	- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	FF 50 million
- 1989 Forecast:	

Type of equipment maintained

Mainframes:	IBM 43XX
Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM
Peripherals:	IBM

COMPANY PROFILE

GRANADA COMPUTER SERVICES SA

France (Granada Southern Europe and France)

50/64 Avenue Francois Arago

92000 Nanterre

Country Code (33) Area Code (1)

Number: 47 60 47 60

Company Information	Number of service centres: 25 France, 5 Italy, 9 Spain	
	Number of employees in maintenance:	533
	Number of engineers:	334
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	* \$33 million
	- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM and all other major manufacturers
Minicomputers:	"
Business PCs:	"
Peripherals:	All major manufacturers

Note: Granada acquired three companies in 1988 to expand its services: one was INFOMAT, a TPM company specialising in the maintenance of banking equipment; the second was INTERSYSTEM, a company in maintenance insurance ("relais de maintenance") and the third was DPCE, which was part of the international acquisition of the DPCE group by Granada. Granada Southern Europe operations cover France, Italy, and Spain. Granada claims to service equipment supplied by over 400 vendors. Revenues stated are the total for Granada's Southern Europe operations.

* INPUT estimate

COMPANY PROFILE

LOCASYSTEM

France

41 Avenue Paul Gautier

75016 Paris

Country Code (33) Area Code (1)

Number: 45 27 60 61

Company Information	Number of service centres:	2
	Number of employees in maintenance:	-
	Number of engineers:	15
	- Field engineers:	-
	- Bench engineers:	-
Revenues derived from maintenance		
	- 1988 Revenues:	FF 4 million
	- 1989 Forecast:	FF 5 million

Type of equipment maintained

Minicomputers: IBM S34, S36, S38, AS400

Business PCs: IBM

Note: Maintains IBM range of equipment only

COMPANY PROFILE

METROSERVICE

France

77-101 Ave du Vieux Chemin St. Denis

BP 102

92232 Gennevilliers Cedex

Country Code (33) Area Code (1)

Number: 47 99 73 19

Company Information	Number of service centres:	20
	Number of employees in maintenance:	-
	Number of engineers:	150
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 140 million
	- 1989 Forecast:	-

Type of equipment maintained

Minicomputers:	Convergent Technology, Rixon Business Systems, Forum
Business PCs:	All major manufacturers
Peripherals:	All major manufacturers

COMPANY PROFILE

MIS

France

17 Boulevard Ney

75018 Paris

Country Code (33) Area Code (1)

Number: 40 38 36 34

Company Information	Number of service centres:	38
	Number of employees in maintenance:	-
	Number of engineers:	200
	- Field engineers:	-
	- Bench engineers:	-
Revenues derived from maintenance		
	- 1988 Revenues:	FF 110 million
	- 1989 Forecast:	

Type of equipment maintained

Mainframes: IBM, Bull

Minicomputers: IBM, Bull

Other Equipment: EFTPOS and ATMs

Note: MIS was the first TPM company to enter the Paris Stock Exchange. In 1989, MIS was acquired by Concept, a major SSII in France, which has also acquired CCMC and Spectral.

COMPANY PROFILE

MMC FRANCE

France

15 Rue Alberti

06047 Nice Cedex

Country Code (33) Area Code (1)

Number: 93 62 38 85

Company Information	Number of service centres:	3
	Number of employees in maintenance:	-
	Number of engineers:	-
	- Field engineers:	-
	- Bench engineers:	-
Revenues derived from maintenance		
	- 1988 Revenues:	FF 50 million
	- 1989 Forecast:	

Type of equipment maintained

Mainframes: IBM 4381

Minicomputers: IBM S34, S36, S38, AS400

Note: "Relais de maintenance" is the principal activity of MMC, but it has also commenced a repair service built on exchange of machines.

COMPANY PROFILE

PROFINFOR MASTER TECHNOLOGY

France

515 Avenue Roland Garos

78530 Buc

Country Code (33) Area Code (1)

Number: 39 56 50 70

Company Information	Number of service centres:	18
	Number of employees in maintenance:	-
	Number of engineers:	65
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 14 million
	- 1989 Forecast:	FF 18 million
	Total Revenues	
	- 1988 Revenues:	FF 33 million
	- 1989 Forecast:	FF 45 million
Type of equipment maintained		
Business PCs:		
IBM, Bull, SMT, Compaq		
Peripherals:		
IBM, Bull, SMT, Compaq		

COMPANY PROFILE

RECOGNITION/MDS

France
 97 Rue de Bercy
 Tour Gamma B
 75582 Paris Cedex 12
 Country Code (33) Area Code (1)
 Number: 40 04 55 55

Company Information	Number of service centres:	10
	Number of employees in maintenance:	-
	Number of engineers:	110
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 1 million
	- 1989 Forecast:	FF 2 Million

Type of equipment maintained

Minicomputers:	Convergent Technology
Business PCs:	Convergent Technology
Peripherals:	Convergent Technology, Bull, NEC

Note: Started TPM operations in October 1988. Main business is selling equipment.

COMPANY PROFILE

SIAM

France

18 Rue de L'Avenir

93800 Epinay-Sur-Seine

Country Code (33) Area Code (1)

Number: 48 22 92 52

Company Information	Number of service centres:	2
	Number of employees in maintenance:	-
	Number of engineers:	23
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 7 million
	- 1989 Forecast:	FF 20 million

Type of equipment maintained

Minicomputers: Texas Instruments

Business PCs: Texas Instruments

Peripherals: Texas Instruments

Note: Although this company does third-party maintenance, its main interest is in consultancy and system integration.

COMPANY PROFILE

SORBUS

France

Parc du Colombier

Rue Jules Saulnier

93200 St. Denis

Country Code (33) Area Code (1)

Number: 48 09 23 23

Company Information	Number of service centres:	11
	Number of employees in maintenance:	-
	Number of engineers:	130
	- Field engineers:	80
	- Bench engineers:	30
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 45 million
	- 1989 Forecast:	FF 70 million

Type of equipment maintained

Minicomputers:	IBM, Bytex, Gandalf
Business PCs:	All major manufacturers
Peripherals:	All major manufacturers

COMPANY PROFILE

SPECTRAL

France

22 Avenue des Nations

Z.I. Paris Nord II

93420 Villepinte

Country Code (33) Area Code (1)

Number: 48 63 23 00

Company Information	Number of service centres:	45
	Number of employees in maintenance:	-
	Number of engineers:	160
	- Field engineers:	-
	- Bench engineers:	-
Revenues derived from maintenance		
	- 1988 Revenues:	FF 125 million
	- 1989 Forecast:	FF 220 million

Type of equipment maintained

Minicomputers:	IBM, Altos, Pertec, Ultimate
Business PCs:	All major manufacturers
Peripherals:	All major manufacturers
Other Equipment:	ATMs and EFTPOS terminals

Note: Strong bias to the banking sector. Spectral was acquired by Concept in early 1989. Concept is a leading SSII in France and also specialises in the banking sector.

COMPANY PROFILE

TASQ

France
 6, Rue des Coutures
 Z.I. Sud
 77200 Torcy
 Country Code (33) Area Code (1)
 Number: 60 17 38 25

Company Information	Number of service centres:	14
	Number of employees in maintenance:	-
	Number of engineers:	60
	- Field engineers:	52
	- Bench engineers:	8
	Revenues derived from maintenance	
	- 1988 Revenues:	N/A
	- 1989 Forecast:	FF 70 million

Type of equipment maintained

Business PCs: Bull, Unisys, IBM and compatibles

Other Equipment: LANs, ATMs

COMPANY PROFILE

THOMAINFOR

France

12 Avenue de L'Europe

BP 44

78140 Velizy Cedex

Country Code (33) Area Code (1)

Number: 30 67 44 84

Company Information	Number of service centres:	40
	Number of employees in maintenance:	-
	Number of engineers:	250
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	FF 100 million*
	- 1989 Forecast:	FF 280 million*

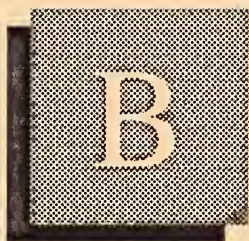
Type of equipment maintained

Minicomputers: Bull, Sintra, SEMS

Business PCs: All IBM compatibles

Note: In June/July 1989 Thomainfor acquired the European TPM business of Control Data.

*INPUT estimates



Appendix: Italian TPM Vendor Profiles



COMPANY PROFILE

CIESSE

Italy

Via Venezia 67/6

Padova

Country Code (39) Area Code (49)

Number: 776588

Company Information	Number of service centres:	29
	Number of employees in maintenance:	183
	Number of engineers:	85
	- Field engineers:	75
	- Bench engineers:	10

Revenues derived from maintenance

- 1988 Revenues:	IL 11.8 billion
- 1989 Forecast:	IL 15.0 billion
Total Revenues	
- 1988 Revenues:	IL 26.5 billion
- 1989 Forecast:	IL 35.0 billion

Type of equipment maintained

Mainframes:	IBM 4381
Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM
Peripherals:	IBM, Decision Data, Honeywell

Note: Olivetti now owns 100% of CIESSE.

COMPANY PROFILE

ECONOCOM

Italy

Via Carducci 43

20099 - Sesto S. Giovanni

Milano

Country Code (39) Area Code (2)

Number: 2427919

Company Information

Number of service centres:	3
Number of employees in maintenance:	55
Number of engineers:	35
- Field engineers:	35
- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	IL 5.5 billion
- 1989 Forecast:	IL 6.5 billion
Total Revenues	
- 1988 Revenues:	IL 160.0 billion approximately
- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM 3033, 4381, 4341
Minicomputers:	IBM S34, S36, S38, Series 1, AS400
Business PCs:	IBM PS/2
Other Equipment:	All IBM peripherals

COMPANY PROFILE

IBIMAINT

Italy

Milanofiori

Palazzo E/4

Milano

Country Code (39) Area Code (2)

Number: 8224

Company Information	Number of service centres:	28
	Number of employees in maintenance:	580
	Number of engineers:	280
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	IL 37 billion
	- 1989 Forecast:	IL 47 billion
	Total Revenues	
	- 1988 Revenues:	IL 83 billion
	- 1989 Forecast:	

Type of equipment maintained

Mainframes:	IBM 43XX
Minicomputers:	Honeywell DPS 4, DPS 6
Business PCs:	IBM and compatibles, Olivetti
Peripherals:	Memorex disks & tapes

Note: Ibimaint is owned by Olivetti.

COMPANY PROFILE

INSIDE MAINTENANCE SA

Italy

Via G. Di Vittorio, 7

42100 Reggio Emilia

Country Code (39) Area Code (522)

Number: 513229

Company Information	Number of service centres:	1
	Number of employees in maintenance:	8
	Number of engineers:	8
	- Field engineers:	4
	- Bench engineers:	4

Revenues derived from maintenance

- 1988 Revenues:	IL 0.4 billion
- 1989 Forecast:	IL 0.5 billion
Total Revenues	
- 1988 Revenues:	IL 3.0 billion
- 1989 Forecast:	IL 4.0 billion

Type of equipment maintained

Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM and compatibles, MPM, IBMIND
Peripherals:	All IBM GSD, Mannesman, Panasonic, Epson, Honeywell

COMPANY PROFILE

RESTORE S.r.L.

Italy

Strada Per Cermusca, 1

20060 Bussero (Milano)

Country Code (39) Area Code (02950)

Number: 950 38112

Company Information

Number of service centres:	1
Number of employees in maintenance:	5
Number of engineers:	6
- Field engineers:	3
- Bench engineers:	3

Revenues derived from maintenance

- 1988 Revenues:	IL 1.0 billion
- 1989 Forecast:	IL 1.0 billion
Total Revenues	
- 1988 Revenues:	IL 3.0 billion
- 1989 Forecast:	IL 3.0 billion

Type of equipment maintained

Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM and compatibles
Peripherals:	IBM GSD, Decision Data

Note: Restore has divested its Sicilian branch.

COMPANY PROFILE

SORBUS

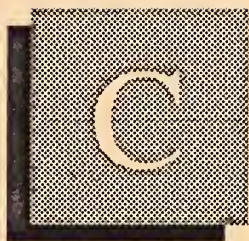
Italy
 Milanofiori
 Strada 7 Palazzo T3
 Rozzano-Milano
 Country Code (39) Area Code (2)
 Number: 822701

Company Information	Number of service centres:	11
	Number of employees in maintenance:	65
	Number of engineers:	45
	- Field engineers:	37
	- Bench engineers:	8
	Revenues derived from maintenance	
	- 1988 Revenues:	IL 6.7 billion
	- 1989 Forecast:	-

Type of equipment maintained

Minicomputers:	IBM, Convergent Technology, Texas Instruments, Olivetti
Business PCs:	IBM, Convergent Technology, Texas Instruments, Olivetti
Peripherals:	VDUs, printers, terminals
Other Equipment:	Telex Automation, Comms equipment

Note: Sorbus has acquired an unnamed IBM service company in Italy.



Appendix: Dutch TPM Vendor Profiles



COMPANY PROFILE

CIRCLE INFORMATION SYSTEMS

Netherlands

Gallileilaan 35

3584 BC Utrecht

Country Code (31) Area Code (30)

Number: 333 414

Company Information	Number of service centres:	5
	Number of employees in maintenance:	25
	Number of engineers:	21
	- Field engineers:	21
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	DFI 3.0 million
	- 1989 Forecast:	*DFI 4.0 million

Type of equipment maintained

Business PCs: Philips, DEC MicroVax, IBM, Tulip, Olivetti

Peripherals: Printers & disk drives

Note: This company was 50% owned by Philips; now is 100% owned.

* INPUT estimate

COMPANY PROFILE

DTC SERVICE

Netherlands

Huis Ter Heideweg, 24

PO Box 2

3700 AA Zeist

Country Code (31) Area Code (3404)

Number: 27222

Company Information

Number of service centres:	1
Number of employees in maintenance:	65
Number of engineers:	45
- Field engineers:	35
- Bench engineers:	10

Revenues derived from maintenance

- 1988 Revenues:	*DFI 25.0 million
- 1989 Forecast:	*DFI 25.0 million

Type of equipment maintained

Minicomputers:	DEC 7XX, DEC MicroVax II & III, 3500, Stratus, Quantel, Dataram
Business PCs:	Apple, Compaq, IBM, Olivetti, Philips, Tandon, Tulip, Wyse, NEC, Newlab (UNIX)
Peripherals:	Pertec, Quantel, Stratus
Other Equipment:	Barr-Brown, Racal Redac CAD/CAM, Roland plotters

Note: One service centre is in Ziest, the other in Brussels. Part of the International Muller Group.

* INPUT estimate

COMPANY PROFILE

ECONOCOM

Netherlands

Paasheuvelweg 10

1105 B.H.

Amsterdam 20

Country Code (31) Area Code (20563)

Number: 3333

Company Information	Number of service centres:	5
	Number of employees in maintenance:	90
	Number of engineers:	60
	- Field engineers:	45
	- Bench engineers:	15

Revenues derived from maintenance

- 1988 Revenues:	Dfl 8.5 million
- 1989 Forecast:	Dfl 12.0 million
Total Revenues	
- 1988 Revenues:	Dfl 10.0 million
- 1989 Forecast:	Dfl 12.0 million

Type of equipment maintained

Mainframes:	IBM 4361
Minicomputers:	IBM S34, S36, S38, AS400
Business PCs:	IBM, Compaq, Zenith, Toshiba, Olivetti, NEC
Peripherals:	Centronics, Printronix, Lynk, Memorex

COMPANY PROFILE

GEVEKE ELECTRONICS

Netherlands

Donauweg 10

1043 AJ Amsterdam

Country Code (31) Area Code (20)

Number: 586 1420

Company Information

Number of service centres:	6
Number of employees in maintenance:	320
Number of engineers:	240
- Field engineers:	145
- Bench engineers:	95

Revenues derived from maintenance

- 1988 Revenues:	DFl 50.0 million
- 1989 Forecast:	DFl 65.0 million

Type of equipment maintained

Minicomputers:	MAI, IBM S34, S36, S38, MicroVax, Wang
Business PCs:	All major manufacturers
Peripherals:	All major manufacturers
Other Equipment:	Data communications equipment

Note: Geveke Electronics was renamed Getronics Service in July 1989.

COMPANY PROFILE

GRANADA COMPUTER SERVICES (Netherlands) BV

Netherlands (Granada Northern Europe and Netherlands Headquarters)

Postbus 149

3454 ZJ De Meern

Country Code (31) Area Code (3406)

Number: 92211

Company Information	Number of service centres: 1 Holland, 3 Belgium, 1 Sweden	
	Number of employees in maintenance:	220
	Number of engineers:	127
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	\$16 million
	- 1989 Forecast:	

Type of equipment maintained

Mainframes:	IBM and most major manufacturers
Minicomputers:	IBM and most major manufacturers
Business PCs:	IBM and most major manufacturers
Peripherals:	IBM and most major manufacturers
Other Equipment:	IBM and most major manufacturers

Note: 1. Granada Northern Europe operations cover the Netherlands, Belgium and Sweden.

2. In January 1988, Granada acquired Mainstay, a specialist IBM GSD maintainer with operations in the Netherlands, Belgium and the U.K. In June 1988, Granada also acquired DPCE, a U.K.-based company with operations in the Netherlands and other European countries.

3. Revenues stated are the total for Granada Northern Europe operations.

COMPANY PROFILE

THYSSEN FIELD SERVICE

Netherlands

Postbus 670

3900 Veenendaal

Country Code (31) Area Code (8385)

Number: 35111

Company Information

Number of service centres:	1
Number of employees in maintenance:	60
Number of engineers:	38
- Field engineers:	30
- Bench engineers:	8

Revenues derived from maintenance

- 1988 Revenues:	DFI 12.0 million
- 1989 Forecast:	DFI 13.8 million

Total Revenues

- 1988 Revenues:	DFI 20.0 million
- 1989 Forecast:	DFI 23.0 million

Type of equipment maintained

Mainframes:	DEC VAX 8550
Minicomputers:	DEC 7XX, DEC MicroVax I & II, DEC 2500, 3900, DEC U-Bus, Q-Bus
Business PCs	DEC Rainbow
Peripherals:	Fujitsu, Emulex, Dilog, CDC, Cifer, Kennedy, Clearpoint, EMC
Other Equipment:	LANs—Ethernet, Bridge, 3-Com



Appendix: Spanish TPM Vendor Profiles



COMPANY PROFILE

CERO MANTENIMIENTOS

Spain

Victor de la Serna, 28

28016 Madrid

Country Code (34) Area Code (1)

Number: 4582451

Company Information	Number of service centres:	4
	Number of employees in maintenance:	30
	Number of engineers:	20
	- Field engineers:	19
	- Bench engineers:	1
	Revenues derived from maintenance	
	- 1988 Revenues:	*Pta 200 million
	- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM 43XX
Minicomputers:	IBM S34, S36, S38
Business PCs:	Various
Peripherals:	IBM for Systems 43XX and S3X

* INPUT estimate

COMPANY PROFILE

ELTEC/MORSA

Spain

Calle Caspe 144-146

08013 Barcelona

Country Code (34) Area Code (3)

Number: 2125800

Company Information

Number of service centres:	24
Number of employees in maintenance:	300
Number of engineers:	160
- Field engineers:	140
- Bench engineers:	12

Revenues derived from maintenance

- 1988 Revenues:	Pta 1000 million
- 1989 Forecast:	Pta 1500 million
Total revenues	
- 1988 Revenues:	Pta 1000 million
- 1500 Revenues:	Pta 1500 million

Type of equipment maintained

Minicomputers:	DEC VAX 7XX, DEC MicroVax II, DEC PDP, IBM S34, S36, S38
Business PCs:	IBM, Olivetti, Unisys, Tandon, Apple, Compaq, Bull, Epson, Goupil
Peripherals:	CITOH, AST, NCR, Facit, HP, Nixdorf, Epson, NEC, Olivetti

Note: ELTEC commenced working together with MORSA on January 1, 1989 as a preliminary to formal merger in 1990. Above figures show the combined resources of the two companies.

The number of engineers includes support staff.

COMPANY PROFILE

IPM

Spain

General Mitre, 93

08028 Barcelona

Country Code (34) Area Code (3)

Number: 2114988

Company Information	Number of service centres:	2
	Number of employees in maintenance:	55
	Number of engineers:	
	- Field engineers:	35
	- Bench engineers:	-
Revenues derived from maintenance		
	- 1988 Revenues:	*Pta 200 million
	- 1989 Forecast:	

Type of equipment maintained

Mainframes:	IBM 4700, 4381, 4341
Minicomputers:	IBM S36, S38, 3033, 3084
Business PCs:	-
Peripherals:	IBM, Storagetek

Note: Agent for Storagetek.

* INPUT estimate.

COMPANY PROFILE

SINTEC

Spain

Bravo Murillo 203 30

Madrid

Country Code (34) Area Code (1)

Number: 7294453

Company Information	Number of service centres:	30
	Number of employees in maintenance:	200
	Number of engineers:	160
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	*Pta 1000 million
	- 1989 Forecast:	-

Type of equipment maintained

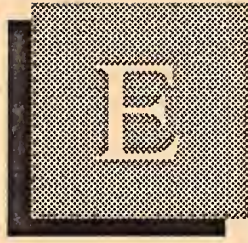
Minicomputers: Philips, Nixdorf, Olivetti

Business PCs: IBM PC-XT, AT

Peripherals: IBM

Note: Concentrates on banking and finance market sector.

* INPUT estimate.



Appendix: Swedish TPM Vendor Profiles

COMPANY PROFILE

DATABOLIM

Sweden

Box 11564

S-10061 Stockholm

Country Code (46) Area Code (8)

Number: 702 3500

Company Information	Number of service centres:	17
	Number of employees in maintenance:	135
	Number of engineers:	115
	- Field engineers:	105
	- Bench engineers:	10

Revenues derived from maintenance

- 1988 Revenues:	SK 15 million
- 1989 Forecast:	SK 18 million
Total revenues	
- 1988 Revenues:	SK 500 million
- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	Convex
Minicomputers:	Hewlett-Packard 9000-615, 625, 635, Prime
Business PCs:	IBM PC and PS/2, Gold, Mitac
Peripherals:	HP, Facit, Fujitsu, Dataproducts, Dataprinter, Printronix, Philips, Texas, Pericom
Other Equipment:	Novell

Note: Other bases in Norway and Finland

COMPANY PROFILE

TELUB

Sweden

Box 278

35105 Varjo

Country Code (46) Area Code (470)

Number: 71700

Company Information

Number of service centres: 17

Number of employees: 200

Number of engineers: 100

- Field engineers: -

- Bench engineers: -

Revenues derived from maintenance

- 1988 Revenues: SK 100 million

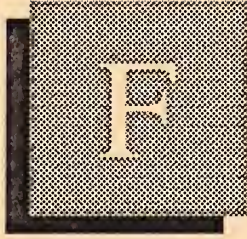
- 1989 Forecast: SK 120 million

Type of equipment maintained

Minicomputers: Digital, Data General, IBM

Business PCs: All major manufacturers

Peripherals: All major manufacturers



Appendix: United Kingdom TPM Vendor Profiles

COMPANY PROFILE

ADVANCED TECHNOLOGY MAINTENANCE LTD.

United Kingdom

21 Bristol Road

Metropolitan Centre

Greenford

Middx UB6 8UP

Country Code (44) Area Code (1)

Number: 578 9222

Company Information	Number of service centres:	10
	Number of employees in maintenance:	115
	Number of engineers:	75
	- Field engineers:	59
	- Bench engineers:	16

Revenues derived from maintenance

- 1988 Revenues:	£3.1 million
- 1989 Forecast:	£4.0 million
Total revenues	
- 1988 Revenues:	£3.1 million
- 1989 Forecast:	*£6.0 million

Type of equipment maintained

Minicomputers:	DEC PDP, DEC MicroVax II
Business PCs:	IBM, Compaq, Amstrad, Toshiba, All major manufacturers
Peripherals:	Dataproducts, DEC, Ricoh, Canon, HP, All major manufacturers
Other Equipment:	Networking products—Novell, 3-Com

* Includes fourth-party maintenance.

COMPANY PROFILE

COMPACT 3000

United Kingdom

The Limes

High Holborn

Sedgely

Dudley

West Midlands DY3 1SU

Country Code (44) Area Code (902)

Number: 880088

Company Information

Number of service centres:	2
Number of employees in maintenance:	60
Number of engineers:	17
- Field engineers:	17
- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	£1.0 million
- 1989 Forecast:	-
Total revenues	
- 1988 Revenues:	£3.6 million
- 1989 Forecast:	£4.5 million

Type of equipment maintained

Minicomputers: Data General, Honeywell

Business PCs: IBM, Apricot, Amstrad, all major manufacturers

Peripherals: Printers

COMPANY PROFILE

COMPUCARE LTD.*

United Kingdom
 Kelvin House
 The Broadway
 Dudley
 West Midlands DY1 4PY
 Country Code (44) Area Code (384)
 Number: 2336 701

Company Information	Number of service centres:	3
	Number of employees in maintenance:	53
	Number of engineers:	40
	- Field engineers:	37
	- Bench engineers:	3
	Revenues derived from maintenance	
	- 1988 Revenues:	-
	- 1989 Forecast:	£2.0 million

Type of equipment maintained

Minicomputers:	DEC VAX 7XX and above, DEC PDP, DEC MicroVax, 3500, 3600, 3800, 3900
Business PCs:	Olivetti, Multitech, Stride, Pinnacle, Sage, IBM and compatibles
Peripherals:	Fujitsu, Matrix, Newdata, CDC Range, DEC, Falco, Wyse, SystimeExabyte, Archive, Cifer

*Was Syscom Plc. Compucare formed January 1, 1989, started trading April 5, 1989.

COMPANY PROFILE

COMPUTER ENGINEERING SERVICES

United Kingdom
 Concord House
 121 Bellhouse Road
 Sheffield
 S. Yorks S5 6HP
 Country Code (44) Area Code (742)
 Number: 420 332

Company Information	Number of service centres:	2
	Number of employees in maintenance:	35
	Number of engineers:	18
	- Field engineers:	10
	- Bench engineers:	8
	Revenues derived from maintenance	
	- 1988 Revenues:	£1.0 million
	- 1989 Forecast:	£1.25 million
	Total revenues	
	- 1988 Revenues:	£2.0 million
	- 1989 Forecast:	£2.5 million

Type of equipment maintained

Minicomputers:	Hewlett-Packard 3000 up to model 48, Hewlett-Packard 250
Business PCs:	All HP 125, 160, Vectra
Peripherals:	HP, Fujitsu, Printronix, optical disks and DAT tape subsystems

COMPANY PROFILE

COMPUTER REPAIR CENTRES LTD.

United Kingdom

17 Thame Park Road

Thame

Oxon OX9 3XD

Country Code (44) Area Code (84)

Number: 421 6861

Company Information	Number of service centres:	6
	Number of employees in maintenance:	96
	Number of engineers:	57
	- Field engineers:	32
	- Bench engineers:	25

Revenues derived from maintenance

- 1988 Revenues:	£1.3 million
- 1989 Forecast:	£2.0 million
Total revenues	
- 1988 Revenues:	£2.5 million
- 1989 Forecast:	£4.0 million

Type of equipment maintained

Peripherals: Maxtor, Quantum, Rodime, Shugart

Other Equipment: Monitor and PSU repair

Note: Company provides field and workshop repair facilities for manufacturers, OEMs and end users.

COMPANY PROFILE

DATA LOGIC

United Kingdom
 Queens House East
 Greenhill Way
 Harrow
 Middx HA1 1YR
 Country Code (44) Area Code (1)
 Number: 863 0383

Company Information

Number of service centres:	7
Number of employees in maintenance:	845
Number of engineers:	147
- Field engineers:	126
- Bench engineers:	21

Revenues derived from maintenance

- 1988 Revenues:	£7.6 million
- 1989 Forecast:	*£7.1 million
Total revenues	
- 1988 Revenues:	£39.0 million
- 1989 Forecast:	-

Type of equipment maintained

Minicomputers:	IBM S34, S36, S38, DEC PDP
Business PCs:	IBM 6150, IBM PCs, Compaq and all other major manufacturers
Peripherals:	PC Peripherals, Raytheon (3270) and all other major manufacturers
Other Equipment:	Communications equipment, Modems, MUXs, etc.

* Attributable to cessations of older equipment

COMPANY PROFILE

DATASERVE LTD.

United Kingdom
 Shire Park
 Welwyn Garden City
 Herts AL7 1LB
 Country Code (44) Area Code (707)
 Number: 372166

Company Information	Number of service centres:	7
	Number of employees in maintenance:	250
	Number of engineers:	75
	- Field engineers:	62
	- Bench engineers:	13

Revenues derived from maintenance

- 1988 Revenues:	-
- 1989 Forecast:	-
Total revenues	
- 1988 Revenues:	-
- 1989 Forecast:	-

Type of equipment maintained

Minicomputers:	IBM S34, S36
Business PCs:	IBM and compatibles

Note: Manufacturers' equipment serviced: IBM, Digital, HP, Wang, Olivetti, Westwood, Pericom and Compaq.

COMPANY PROFILE

DATASOLVE COMPUTERAID

United Kingdom
 40 Invincible Road
 Farnborough
 Hants GU14 7UQ
 Country Code (44) Area Code (252)
 Number: 548888

Company Information	Number of service centres:	14
	Number of employees in maintenance:	350
	Number of engineers:	220
	- Field engineers:	-
	- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	£10 million
- 1989 Forecast:	*£12 million
Total revenues	
- 1988 Revenues:	-
- 1989 Forecast:	-

Type of equipment maintained

Business PCs:	IBM, Compaq, Toshiba, Future, Olivetti, Dell, Epson
Peripherals:	Lasers—Kyocera, Fujitsu, OKI, Canon, HP
Other Equipment:	EPOS—Micrologic Networking—Token Ring, Ethernet, Arcnet, Novell

* With amalgamation will be £15 million

COMPANY PROFILE

DDT MAINTENANCE

United Kingdom
 58-64 Northfields Road
 Kings Norton
 Birmingham B30 1JH
 Country Code (44) Area Code (21)
 Number: 458 3205

Company Information	Number of service centres:	10
	Number of employees in maintenance:	*294
	Number of engineers:	190
	- Field engineers:	120
	- Bench engineers:	70
	Revenues derived from maintenance	
	- 1988 Revenues:	-
	- 1989 Forecast:	-
	Total revenues	
	- 1988 Revenues:	**£7.2 million
	- 1989 Forecast:	**£8.64 million

Type of equipment maintained

Business PCs:	All major manufacturers
Peripherals:	All major manufacturers
Other Equipment:	Networking

Note: Acquired by Apricot in 1989.

* Plus 21 engineers in Ireland.

** Includes U.K. and Ireland.

COMPANY PROFILE

DIGITAL COMPUTER SERVICES LTD.

United Kingdom
 Network House
 Oxford Road
 Denham, Uxbridge
 Middx UB9 4DN
 Country Code (44) Area Code (895)
 Number: 74141

Company Information	Number of service centres:	5
	Number of employees in maintenance:	90
	Number of engineers:	70
	- Field engineers:	55
	- Bench engineers:	15

Revenues derived from maintenance

- 1988 Revenues:	£5.0 million
- 1989 Forecast:	£6.0 million
Total revenues	
- 1988 Revenues:	£5.0 million
- 1989 Forecast:	£6.0 million

Type of equipment maintained

Mainframes:	DEC VAX 8000 Series
Minicomputers:	DEC PDP—U-Bus & Q-Bus, IBM S34, S36, Wang VS
Business PCs:	DEC, IBM, Apple, Wang, Compaq, NEC, Tandon, Wyse, Olivetti, Zenith, Apricot, Future
Peripherals:	Epsom, Mannesman, Printronix, HP Laserjet, DEC, Dataproducts, Dataprinter, Pericom, Wyse
Other Equipment:	Comms—Bridge, Racal, Miracle, Dowty, Case

COMPANY PROFILE

ECONOCOM COMPUTER MAINTENANCE LTD.

United Kingdom

Regal House

London Road

Twickenham

Middx TW1 3QS

Country Code (44) Area Code (1)

Number: 744 1122

Company Information	Number of service centres:	2
	Number of employees in maintenance:	10
	Number of engineers:	8
	- Field engineers:	7
	- Bench engineers:	1

Revenues derived from maintenance

- 1988 Revenues:	£1.5 million
- 1989 Forecast:	£2.0 million

European TPM Revenues

- 1988 Revenues:	USD 300 million
- 1989 Forecast:	-

Type of equipment maintained

Minicomputers: IBM S34, S36, S38, AS400

Business PCs: IBM, Econocom, Compaq, Apricot, Amstrad

Peripherals: IBM and PC peripherals

COMPANY PROFILE

EXTEL INFORMATION TECHNOLOGY

United Kingdom

House Park

Kings Langley

Herts WD4 8LZ

Country Code (44) Area Code (9277)

Number: 66144

Company Information

Number of service centres: 13

Number of employees in maintenance: 260

Number of engineers: -

Revenues derived from maintenance

- 1988 Revenues: *£1.20 million

- 1989 Forecast: -

Total revenues

- 1988 Revenues: -

- 1989 Forecast: -

Type of equipment maintained

Mainframes: ICL

Minicomputers: IBM S34, S36, S38, AS400

Business PCs: Apricot, Compaq, IBM, Zenith, Tandon, Digital
Micro Systems

Peripherals: Apricot, Brother, HP, Canon, Diablo, OKI, NEC,
Olivetti, Ricoh, Toshiba, ICL, Wyse, Fujitsu

Other Equipment: Communications—X25 Packet switching, MUXs

* INPUT estimate

COMPANY PROFILE

GRANADA COMPUTER SERVICES (U.K.) LTD.

United Kingdom
 Excell House
 Wilbury Way
 Trust Industrial Estate
 Hitchin, Herts SG4 0UZ
 Country Code (44) Area Code (462)
 Number: 421511

Company Information	Number of service centres:	35
	Number of employees in maintenance:	1,800
	Number of engineers:	-

Revenues derived from maintenance	
- 1988 Revenues:	*£65 million
- 1989 Forecast:	-
Total revenues	
- 1988 Revenues:	-
- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM and all major manufacturers
Minicomputers:	IBM and all major manufacturers
Business PCs:	IBM and all major manufacturers
Peripherals:	IBM and all major manufacturers
Other Equipment:	IBM and all major manufacturers

Note: Granada is a multinational TPM with international headquarters in the United Kingdom. Companies acquired by Granada include DPCE, CFM, Mainstay, Infomat, Intersystem, Semsi and Wigo.

Granada Computer Services' international headquarters is located at:

27 Broad Street
 Wokingham
 Berks
 RG 11 1AU
 Country Code (44) Area Code (734)
 Number: 774 000

* INPUT estimate

COMPANY PROFILE

ICM

United Kingdom
 ICM House
 Oakwell Way
 Birstall
 West Yorks WF7 9LU
 Country Code (44) Area Code (532)
 Number: 760066

Company Information

Number of service centres:	7
Number of employees in maintenance:	90
Number of engineers:	70
- Field engineers:	63
- Bench engineers:	7

Revenues derived from maintenance

- 1988 Revenues:	-
- 1989 Forecast:	-
Total revenues	
- 1988 Revenues:	£4.0 million
- 1989 Forecast:	£5.5 million

Type of equipment maintained

Mainframes:	DEC VAX 8650
Minicomputers:	DEC VAX 7XX, DEC MicroVax II to 3500, DEC PDP—U-bus & Q-bus, all VAX & PDP, Altos
Business PCs:	Compaq, Apricot, IBM, Olivetti, Tandon
Peripherals:	DEC, Fujitsu, Mannesman, Genicom, Dataproducts
Other Equipment:	LANs—Ethernet; Communications—Case, Micron-Borer, Racal-Milgo

COMPANY PROFILE

ITM LTD.*

United Kingdom
 4 Crown Business Estate
 Horton Road
 West Drayton
 Middx UB7 8HZ
 Country Code (44) Area Code (1)
 Number: 890 1440

Company Information	Number of service centres:	2
	Number of employees in maintenance:	20
	Number of engineers:	10
	- Field engineers:	10
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	£4.5 million
	- 1989 Forecast:	£4.5 million
	Total revenues	
	- 1988 Revenues:	-
	- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM 3090, Memorex, Comparex
Minicomputers:	IBM
Business PCs:	IBM
Peripherals:	IBM

* Was Meridian Computer Engineering. Also French company.

COMPANY PROFILE

JAECROW SERVICES LTD.

United Kingdom
 59 Imperial Way
 Croydon Airport Industrial Estate CR9 4RL
 Country Code (44) Area Code (1)
 Number: 680 9191

Company Information	Number of service centres:	2
	Number of employees in maintenance:	100
	Number of engineers:	*70
	- Field engineers:	45
	- Bench engineers:	20

Revenues derived from maintenance

- 1988 Revenues:	£2.8 million
- 1989 Forecast:	£3.2 million
Total revenues	
- 1988 Revenues:	£2.8 million
- 1989 Forecast:	£3.2 million

Type of equipment maintained

Business PCs:	Amstrad, AST, Compaq, CPT, Apricot, Apple, IBM PS/2, Mission, Opus, Tandon, Tulip, Vanilla
Peripherals:	All popular peripherals and laser printers—Canon, Ricoh, Kyocera
Other Equipment:	Networks—Novell, Roland plotters, Houston plotters

* Includes support personnel

COMPANY PROFILE

KMS DATACARE

United Kingdom

Mill Lane

Worthfield

Birmingham B31 2RW

Country Code (44) Area Code (21)

Number: 411 2345

Company Information

Number of service centres:	16
Number of employees in maintenance:	150
Number of engineers:	80
- Field engineers:	60
- Bench engineers:	20

Revenues derived from maintenance

- 1988 Revenues:	£4.2 million
- 1989 Forecast:	-
Total revenues	
- 1988 Revenues:	£6.0 million
- 1989 Forecast:	-

Type of equipment maintained

Minicomputers:	NCR Tower, Unisys 5000, Altos
Business PCs:	IBM, Compaq, Tandon, Sperry, Amstrad
Peripherals:	Laser printers—Dataproducts, Canon, HP, Kyocera, Qume; Printers—Epson, Seikosha, Genicom, CITHO, OKI, IBM
Other Equipment:	Communications—Datascopes, Telex Autoscope network management systems, modems, MUXs

COMPANY PROFILE

LTSS (was Logitek)

United Kingdom

Bradley Lane

Standish

Greater Manchester WN6 0XQ

Country Code (44) Area Code (257)

Number: 42664

Company Information

Number of service centres:	6
Number of employees in maintenance:	80
Number of engineers:	*55
- Field engineers:	40
- Bench engineers:	8

Revenues derived from maintenance

- 1988 Revenues:	£3.0 million
- 1989 Forecast:	£5.5 million
Total revenues	
- 1988 Revenues:	£3.6 million
- 1989 Forecast:	£7.0 million

Type of equipment maintained

Minicomputers:	Altos
Business PCs:	As part of LAN only—IBM, Wyse, Samsung, etc.
Peripherals:	All Wyse products, Genicom, Sharp, Panasonic, Samsung, Sony workstations (Distributor)
Other Equipment:	Communications—3-Comm (Distributor), ICOT, Dowty, Bridge, Cabletron, BICC

* Includes support personnel

COMPANY PROFILE

MEGABYTE LTD.

United Kingdom

Rooley Lane

Dudley Hill

Bradford BO4 7SQ

Country Code (44) Area Code (274)

Number: 688541

Company Information	Number of service centres:	3
	Number of employees in maintenance:	11
	Number of engineers:	10
	- Field engineers:	10
	- Bench engineers:	0

Revenues derived from maintenance

- 1988 Revenues:	£500 thousand
- 1989 Forecast:	£500 thousand
Total revenues	
- 1988 Revenues:	£2.6 million
- 1989 Forecast:	£3.0 million

Type of equipment maintained

Minicomputers:	DEC PDPs, DEC MicroVax II
Business PCs:	Apricot
Peripherals:	CDC, Fujitsu, Emulex, Printronix

COMPANY PROFILE

MICRO SYSTEM MAINTENANCE LTD.

United Kingdom
 15, Westmead Ind. Estate
 Westlea, Swindon
 Wilts SN5 7YS
 Country Code (44) Area Code (793)
 Number: 616 888

Company Information	Number of service centres:	8
	Number of employees in maintenance:	96
	Number of engineers:	72
	- Field engineers:	65
	- Bench engineers:	7

Revenues derived from maintenance

- 1988 Revenues:	£1.85 million
- 1989 Forecast:	£2.55 million
Total revenues	
- 1988 Revenues:	£1.85 million
- 1989 Forecast:	£2.55 million

Type of equipment maintained

Business PCs:	Apricot, Amstrad, Aston Technology, Atari, Olivetti, Pertec, Acorn, Compaq, IBM, Research Machines, Wyse, Sirius, Tandon, REXON
Peripherals:	Terminals—Wyse, Link, Ampex, Insight, Qume, Microvitec, NEC, Panasonic; Printers—NEC, Citizen, Panasonic, Epson, Fujitsu, Brother, Microline, Newbury, Printronix, OTC, Mannesman, Canon

COMPANY PROFILE

NATIONWIDE SYSTEMS ENGINEERING

United Kingdom
 Nationwide House
 Victoria Way
 Burgess Hill
 West Sussex RH15 9TW
 Country Code (44) Area Code (4446)
 Number: 45211

Company Information	Number of service centres:	1
	Number of employees in maintenance:	42
	Number of engineers:	28
	- Field engineers:	24
	- Bench engineers:	4

Revenues derived from maintenance	
- 1988 Revenues:	£1.6 million
- 1989 Forecast:	£2.5 million
Total revenues	
- 1988 Revenues:	£1.6 million
- 1989 Forecast:	£2.5 million

Type of equipment maintained

Business PCs:	Tulip, Samsung, IBM, Tandon, Epson, Amstrad
Peripherals:	Fujitsu printers, Roland and Mutoh plotters, Cambridge Graphics

COMPANY PROFILE

NELSON COMPUTER SERVICES LTD.

United Kingdom
 St. Johns Court
 Bacup Road
 Rawtenstall
 Rossendale
 Lancs BB4 7PA
 Country Code (44) Area Code (706)
 Number: 217 755

Company Information	Number of service centres:	3
	Number of employees in maintenance:	70
	Number of engineers:	58
	- Field engineers:	38
	- Bench engineers:	20

Revenues derived from maintenance

- 1988 Revenues:	£3.0 million
- 1989 Forecast:	£4.25 million
Total revenues	
- 1988 Revenues:	£3.5 million
- 1989 Forecast:	£5.0 million

Type of equipment maintained

Business PCs:	Most leading manufacturers—IBM, Compaq, Tandon, Olivetti, Amstrad, Apple, Apricot
Peripherals:	Most leading manufacturers
Other Equipment:	Networks, CAD/CAM, punched card—IBM, ICL, Univac, Kode, Decision Data. Forms Handling—burstors and collators

COMPANY PROFILE

PENNY AND GILES

United Kingdom

6 Airfield Way

Christchurch

Dorset BH23 3TT

Country Code (44) Area Code (202)

Number: 477 461

Company Information

Number of service centres:	2
Number of employees in maintenance:	15
Number of engineers:	6
- Field engineers:	3
- Bench engineers:	3

Revenues derived from maintenance

- 1988 Revenues:	£200 thousand
- 1989 Forecast:	£240 thousand
Total revenues	
- 1988 Revenues:	£950 thousand
- 1989 Forecast:	£1.0 million

Type of equipment maintained

Business PCs: Amstrad, Acer, Televideo

Peripherals: Zentec, Lear Siegler, Televideo, Mannesman,
Honeywell, Epson, OKI, Qume

COMPANY PROFILE

Q-COM

United Kingdom

Monaco House

Bristol Street

Birmingham B5 7AS

Country Code (44) Area Code (21)

Number: 622 7165

Company Information

Number of service centres:	3
Number of employees in maintenance:	20
Number of engineers:	12
- Field engineers:	10
- Bench engineers:	2

Revenues derived from maintenance

- 1988 Revenues:	£300 thousand
- 1989 Forecast:	£500 thousand
Total revenues	
- 1988 Revenues:	£300 thousand
- 1989 Forecast:	£500 thousand

Type of equipment maintained

Business PCs:	Most major manufacturers, including IBM, Compaq, Tandon, Schneider, etc.
Peripherals:	Most major manufacturers, including Epson, Brother, Anadex
Other Equipment:	Cambridge Colour Graphics

COMPANY PROFILE

QUEST SUPPORT SERVICES LTD.

United Kingdom
 School Lane
 Chandlers Ford
 Hampshire SO53YY
 Country Code (44) Area Code (703)
 Number: 266 321

Company Information	Number of service centres:	6
	Number of employees in maintenance:	154
	Number of engineers:	115
	- Field engineers:	95
	- Bench engineers:	20
Revenues derived from maintenance		
	- 1988 Revenues:	£5.0 million
	- 1989 Forecast:	£6.0 million

Type of equipment maintained

Minicomputers:	IBM 6150, IBM, Computer Automation, DEC, Quest
Business PCs:	All major manufacturers
Peripherals:	All major manufacturers
Other Equipment:	CAD, graphics systems, networks, controllers, communications equipment, disk-copying equipment

COMPANY PROFILE

SORBUS U.K. LTD.

United Kingdom

13 Mount Road

Feltham

Middx TW13 6AR

Country Code (44) Area Code (1)

Number: 898 9631

Company Information

Number of service centres:

Number of employees in maintenance:

Number of engineers:

- Field engineers:

- Bench engineers:

Revenues derived from maintenance

- 1988 Revenues: *£13.5 million

- 1989 Forecast: -

Type of equipment maintained

Mainframes:

Minicomputers:

Business PCs:

Peripherals:

Other Equipment:

Note: Due to reorganisation at the time research was being carried out, little information was available.

* INPUT estimate

COMPANY PROFILE

SYSMATIC LTD.

United Kingdom

3 Arkwright Road

Reading Berks RG2 0EA

Country Code (44) Area Code (734)

Number: 311011

Company Information

Number of service centres:	5
Number of employees in maintenance:	82
Number of engineers:	*53
- Field engineers:	32
- Bench engineers:	17

Revenues derived from maintenance

- 1988 Revenues:	£2.4 million
- 1989 Forecast:	£3.6 million

Type of equipment maintained

Minicomputers: DEC 750 to MicroVax II

Business PCs: IBM, Compaq, Tandon, Olivetti, Dell, Amstrad

Peripherals: Most major PC peripherals maintained

* Includes support personnel

COMPANY PROFILE

SYSTEM RELIABILITY

United Kingdom
 400 Dallow Road
 Luton Beds LU1 1R
 Country Code (44) Area Code (582)
 Number: 408508

Company Information	Number of service centres:	13
	Number of employees in maintenance:	250
	Number of engineers:	195
	- Field engineers:	175
	- Bench engineers:	20

Revenues derived from maintenance

- 1988 Revenues:	£7.0 million
- 1989 Forecast:	£9.0 million
Total Revenues	
- 1988 Revenues	£24.0 million
- 1989 Forecast:	-

Type of equipment maintained

PCs and Supermicros: IBM PS/2, Altos, NCR, Alpha Micro

Peripherals: VDUs, printers, terminals, tape streamers

Other: LANs

Note: Systems Reliability is a subsidiary of Systems Reliability PLC.

COMPANY PROFILE

TPM LTD.

United Kingdom
 24, Longmoor Road
 Liphook
 Hants GU30 7NY
 Country Code (44) Area Code (428)
 Number: 723819

Company Information

Number of service centres:	1
Number of employees in maintenance:	14
Number of engineers:	10
- Field engineers:	7
- Bench engineers:	3

Revenues derived from maintenance

- 1988 Revenues:	£384.0 thousand
- 1989 Forecast:	-
Total revenues	
- 1988 Revenues:	£500.0 thousand
- 1989 Forecast:	£650.0 thousand

Type of equipment maintained

Business PCs:	IBM PS/2, AT and most major manufacturers
Peripherals:	Most major manufacturers

COMPANY PROFILE

VISTEC

United Kingdom
 Vistec House
 Nottingham Road
 Belper
 Derbys DE5 1JQ
 Country Code (44) Area Code (773)
 Number: 826811

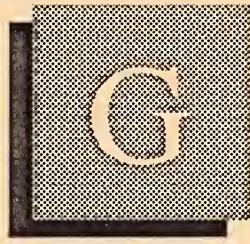
Company Information	Number of service centres:	13
	Number of employees in maintenance:	130
	Number of engineers:	100
	- Field engineers:	80
	- Bench engineers:	20

Revenues derived from maintenance

- 1988 Revenues:	£6.0 million
- 1989 Forecast:	£7.0 million
Total revenues	
- 1988 Revenues:	£20.0 million
- 1989 Forecast:	£25.0 million

Type of equipment maintained

Business PCs:	Amstrad, IBM, Compaq, Canon, Toshiba
Peripherals:	Epson, Canon, IBM, HP Laserjet, modems and tape streamers
Other Equipment:	Viewdata—Sony, Philips



Appendix: German TPM Vendor Profiles



COMPANY PROFILE

AREATECH COMPUTER SERVICES

West Germany
 Wahler Strasse 14
 D-4000 Dusseldorf 30
 Country Code (49) Area Code (211)
 Number: 65 80 50

Company Information	Number of service centres:	9
	Number of employees in maintenance:	62
	Number of engineers:	42
	- Field engineers:	38
	- Bench engineers:	4
Revenues derived from maintenance		
	- 1988 Revenues:	DM 5.0 million
	- 1989 Forecast:	DM 8.4 million
	Total revenues	
	- 1988 Revenues:	DM 5.5 million
	- 1989 Revenues:	DM 9.0 million

Type of equipment maintained

Mainframes: IBM 309X, 308X, 43XX, Comparex, Siemens

Minicomputers: IBM S36, S38

Peripherals: All IBM and IBM-compatible

Note: Owned by CSC

COMPANY PROFILE

AWITEX COMPUTER SERVICES

West Germany

Jan-Hofer Strasse 31

8031, Maisich 2

Country Code (49) Area Code (8142)

Number: 28610

Company Information

Number of service centres:	7
Number of employees in maintenance:	40
Number of engineers:	25
- Field engineers:	20
- Bench engineers:	5

Revenues derived from maintenance

- 1988 Revenues:	DM 4 million
- 1989 Forecast:	DM 5 million
Total revenues	
- 1988 Revenues:	DM 40 million
- 1989 Revenues:	DM 50 million

Type of equipment maintained

Minicomputers: DEC VAX 6XXX, Sun

Business PCs: DEC Rainbow

Peripherals: Emulex, Fujitsu, Kennedy, Dilog, Dateline, Centronics, Dataproducts, Printronix, NEC

COMPANY PROFILE

ECONOCOM

West Germany
Otto Hahn Strasse 123
6070 Langen
Country Code (49) Area Code (6103)
Number: 7050

Company Information	Number of service centres:	9
	Number of employees in maintenance:	100
	Number of engineers:	65
	- Field engineers:	40
	- Bench engineers:	25
	Revenues derived from maintenance	
	- 1988 Revenues:	DM 11 million
	- 1989 Forecast:	DM 15 million
	Total revenues	
	- 1988 Revenues:	DM 15 million
	- 1989 Revenues:	DM 19 million
Type of equipment maintained		
Mainframes: IBM 308X		
Minicomputers: IBM S34, S36, S38, AS400		
Business PCs: IBM		
Peripherals: IBM, Centronics, Lynk		

Note: Remote diagnostic support introduced in April 1989.

COMPANY PROFILE

FORUM

West Germany
 Johann G. Gutenberg Strasse, 33
 D-8037 Olching
 Country Code (49) Area Code (8142)
 Number: 28031

Company Information	Number of service centres:	2
	Number of employees in maintenance:	21
	Number of engineers:	14
	- Field engineers:	12
	- Bench engineers:	1
Revenues derived from maintenance		
	- 1988 Revenues:	DM 2.5 million
	- 1989 Forecast:	DM 3.0 million

Type of equipment maintained

Mainframes:	DEC VAX 8250, 8350
Minicomputers:	DEC VAX 7XX, MicroVax II, MicroVax 2000, 3000, PDP Q-Bus & U-Bus
Business PCs:	IBM and IBM compatible
Peripherals:	Digital, Fujitsu, NEC, Maxstor, Cifer, Kennedy, Pertec, Emulex, Dilog
Other Equipment:	Communications—Xyplex

COMPANY PROFILE

GRANADA COMPUTER SERVICES GmbH

West Germany (Granada-Mid-Europe Headquarters)

AM Sudpark 31

4040 Neuss I

Country Code (49) Area Code (2101)

Number: 465392

Company Information	Number of service centres: 25 Germany, 1 Switzerland	
	Number of employees in maintenance:	170
	Number of engineers:	123
	- Field engineers:	-
	- Bench engineers:	-
	Revenues derived from maintenance	
	- 1988 Revenues:	*\$11.0 million
	- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM and most major manufacturers
Minicomputers:	IBM and most major manufacturers
Business PCs:	IBM and most major manufacturers
Peripherals:	IBM and most major manufacturers
Other Equipment:	IBM and most major manufacturers

Note: 1. Granada-mid-Europe operations cover West Germany and Switzerland. In October 1988, Granada acquired WIGO in Germany.

2. Revenues stated are the totals for Granada Mid-european operations.

* INPUT estimate

COMPANY PROFILE

MULTITECH COMPUTER SYSTEMS (was Xtec Computer Systems)

West Germany

Niederurseler Allee 8-10

D-6236 Eschborn 1

Country Code (49) Area Code (6196)

Number: 70120

Company Information

Number of service centres:	11
Number of employees in maintenance:	50
Number of engineers:	30
- Field engineers:	26
- Bench engineers:	4

Revenues derived from maintenance

- 1988 Revenues:	DM 7.5 million
- 1989 Forecast:	DM 8.0 million
Total revenues	
- 1988 Revenues:	DM 50 million
- 1989 Revenues:	*DM 11 million

Type of equipment maintained

Business PCs: IBM, IBM compatibles, Tandon, Mitac

Peripherals: Dataproducts, Printronix, Dataprinter

Other Equipment: LANs based on Novell, Token Ring topography

* Movement to concentrate on sales and service now.

COMPANY PROFILE

SORBUS

West Germany
Josefinstrasse, 13
4000 Dusseldorf
Country Code (49) Area Code (211)
Number: 139 080

Company Information

Number of service centres:	6
Number of employees in maintenance:	120
Number of engineers:	110
- Field engineers:	-
- Bench engineers:	-
Revenues derived from maintenance	
- 1988 Revenues:	DM 30 million
- 1989 Forecast:	-

Type of equipment maintained

Mainframes:	IBM 308X, 43XX
Minicomputers:	IBM S34, S36, S38
Business PCs:	IBM and compatibles
Peripherals:	IBM and compatibles

COMPANY PROFILE

TELUB BITRONIC

West Germany

Stahlenbergerweg, 16

6000 Frankfurt am 70

Country Code (49) Area Code (69)

Number: 618056

Company Information

Number of service centres:	6
Number of employees in maintenance:	75
Number of engineers:	67
- Field engineers:	-
- Bench engineers:	-

Revenues derived from maintenance

- 1988 Revenues:	*DM 6.6 million
- 1989 Forecast:	DM 8.5 million

Type of equipment maintained

Minicomputers:	Cromenco, Convergent Technology, Datagraph, IBM
Business PCs:	Minolta, Sharp, IBM, Tandon, Victor, Panasonic
Peripherals:	AST Research, Dataproducts, Genicom, Centronics, Fujitsu

* Includes fourth-party maintenance revenues

COMPANY PROFILE

TEKSERV EUROPE

West Germany

Hahnstrasse, 32-35

Frankfurt 71

Country Code (49) Area Code (69)

Number: 66910

Company Information	Number of service centres:	13
	Number of employees in maintenance:	192
	Number of engineers:	*158
	- Field engineers:	121
	- Bench engineers:	4

Revenues derived from maintenance

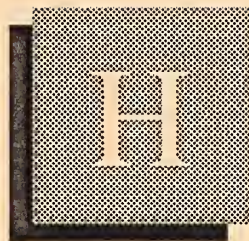
- 1988 Revenues:	DM 4.5 million
- 1989 Forecast:	DM 4.5 million
Total revenues	
- 1988 Revenues:	DM 58 million
- 1989 Revenues:	DM 60 million

Type of equipment maintained

Minicomputers:	MAI, DEC VAX 7XX, DEC MicroVax II
Business PCs:	All IBM AT & XT compatibles, MAI, Rainbow, Olivetti, HP
Peripherals:	Mannesmann-Tally, Printronix

Note: Sold DEC maintenance subsidiary to AWITEX

* Includes systems support personnel



Appendix: Profiles of Other European TPM Vendors



COMPANY PROFILE

S & S ELECTRONIC & COMPUTER TECHNIC

Austria

Wilhemstrasse, 9

A 3430 Tulln

Country Code (43) Area Code (2272)

Number: 3363

Company Information

Number of service centres:	8
Number of employees in maintenance:	65
Number of engineers:	53
- Field engineers:	33
- Bench engineers:	20

Revenues derived from maintenance

- 1988 Revenues:	AS 75 million
- 1989 Forecast:	AS 100 million

Type of equipment maintained

Business PCs:	IBM, Olivetti, Philips, Nixdorf, Apple, Atari, HP
Peripherals:	Epson, Fujitsu, NEC, IBM
Other Equipment:	Bank terminals—IBM, Philips, Siemens; Money-handling systems (ATM)—IBM, De la Rue; Networks—LANs and WANs

COMPANY PROFILE

ECONOCOM SERVICES

Belgium

Brixton Laan 22-24

1930 Zaventem

Country Code (32) Area Code (2)

Number: 7209820

Company Information

Number of service centres:	4
Number of employees in maintenance:	85
Number of engineers:	45
- Field engineers:	28
- Bench engineers:	17

Revenues derived from maintenance

- 1988 Revenues:	BF 280.00 million
- 1989 Forecast:	BF 322.00 million

Type of equipment maintained

Mainframes:	IBM 308X, 43XX
Minicomputers:	IBM S34, S36, S38, AS400, Digital
Business PCs:	IBM and compatibles, Apple
Peripherals:	Centronics, Printronics, Idea, Epson, Philips, HP Laserjet

Note: Affiliated to leasing company. Primarily an IBM maintainer.

COMPANY PROFILE

GEVEKE ELECTRONICS SERVICE

Belgium

Pontgbeeglaan, 43

1730 Zellig

Country Code (32) Area Code (2)

Number: 4671711

Company Information	Number of service centres:	3
	Number of employees in maintenance:	70
	Number of engineers:	50
	- Field engineers:	40
	- Bench engineers:	10

Revenues derived from maintenance

- 1988 Revenues: BF 148 million
- 1989 Forecast: BF 186 to BF 223 million

Type of equipment maintained

Minicomputers: MAI, IBM S34, S36, S38, Digital MicroVax, Wang

Business PCs: All major manufacturers

Peripherals: All major manufacturers

Note: Geveke renamed Getronics Service July 1989.

COMPANY PROFILE

THYSSEN

Belgium

Kesteeelstraat 194

B 9360 Buggenhout

Country Code (32) Area Code (52)

Number: 330160

Company Information

Number of service centres:	1
Number of employees in maintenance:	15
Number of engineers:	*13
- Field engineers:	9
- Bench engineers:	1

Revenues derived from maintenance

- 1988 Revenues:	BF 74 million
- 1989 Forecast:	BF 85 million
Total revenues	
- 1988 Revenues:	BF 92 million
- 1989 Forecast:	BF 106 million

Type of equipment maintained

Minicomputers: As Netherlands

Business PCs: As Netherlands

Peripherals: As Netherlands

Other Equipment: As Netherlands

* Includes support personnel

COMPANY PROFILE

TELUB SERVICE A/S

Denmark

Naverland 29

DK-2600 Glostrup

Country Code (45) Area Code (42)

Number: 458844

Company Information

Number of service centres: 3

Number of employees in maintenance: 36

Number of engineers: 25

- Field engineers:

- Bench engineers:

Revenues derived from maintenance

- 1988 Revenues: DK 18 million

- 1989 Forecast: DK 28 million

Type of equipment maintained

Mainframes:

Minicomputers:

Business PCs:

Peripherals:

Other Equipment:

COMPANY PROFILE

TELUB SERVICE OY

Finland

Kornfallsvagen 2A

SF-6800 Helsingfors

Country Code (358) Area Code (7)

Number: 22733

Company Information

Number of service centres: 6

Number of employees in maintenance: 21

Number of engineers: 16

- Field engineers:

- Bench engineers:

Revenues derived from maintenance

- 1988 Revenues: FM 9.2 million

- 1989 Forecast: FM 10.6 million

Type of equipment maintained

Mainframes:

Minicomputers:

Business PCs:

Peripherals:

Other Equipment:

COMPANY PROFILE

TELUB SERVICE A/S

Norway

Loren Vangen 23

Postboks 48 Refstad

N-0513 Oslo 5

B 9360 Buggenhout

Country Code (47) Area Code (2)

Number: 652250

Company Information

Number of service centres: 5

Number of employees in maintenance: 26

Number of engineers: 20

- Field engineers: -

- Bench engineers: -

Revenues derived from maintenance

- 1988 Revenues: NK 12.8 million

- 1989 Forecast: NK 14.4 million

Type of equipment maintained

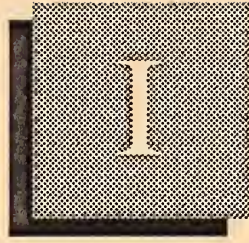
Mainframes:

Minicomputers:

Business PCs:

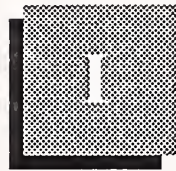
Peripherals:

Other Equipment:



Appendix: Reconciliation of 1989 and 1988 Market Forecasts





Appendix: Reconciliation of 1989 and 1988 Market Forecasts

Each year INPUT examines the market forecasts provided in previous years' reports in the light of new data obtained from:

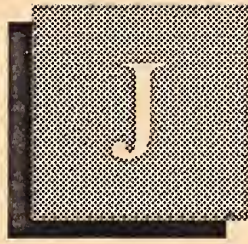
- Current year's research
- Actual performance of vendors compared to forecasts
- Reassessment of market drivers and inhibitors and long term industry trends
- Merger and acquisition activity that may influence the forecasts

Exhibit I-1 lists a comparison of the forecasts contained within this year's report with those included in INPUT's 1988 report on the West European independent maintenance market.

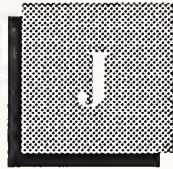
EXHIBIT I-1

TPM Market Forecast Reconciliation

Country	1988 Forecast of 1988 Market	1989 Estimate of 1988 Market	CAGR Forecast in 1988 Report (1987-1993) (Percent)	CAGR Forecast in 1989 Report (1988-1994) (Percent)
Austria	85 M AS	150 M AS	26	26
Belgium	950 M BF	1,025 M BF	15	16
France	880 M FF	1,290 M FF	18	17
Italy	90 B Lira	98 B Lira	15	16
Netherlands	155 M Dfl	165 M Dfl	16	15
Sweden	210 M SK	225 M SK	9	8
Spain	2,200 M PTA	3,750 M PTA	28	28
U.K.	200 M £	195 M £	15	17
West Germany	165 M DM	125 M DM	14	16



Appendix: TPM Vendor Questionnaire



Appendix: TPM Vendor Questionnaire

Independent Maintenance in Europe—1989 TPM Vendor Questionnaire

I. General

1. Company _____
2. Respondent Name _____
3. Title _____
4. Address _____

5. Country _____
6. Telephone Country Code _____
 Area Code _____
 Number _____

II. Company Profile

7. a. Number of Service Centres _____
b. Service Centres in: _____

8. Total Number of Employees _____
9. a. Total Number of Engineers _____
b. Number of Field Engineers _____
c. Number of Bench Engineers _____

10. Equipment Maintained

- a. Mainframes
- b. Minicomputers
- c. PCs
- d. Peripherals
- e. Other

III. Financial Information

- | | 1988 | 1989
(Forecast) |
|----------------------------|-------|--------------------|
| 11. a. Total Revenues | _____ | _____ |
| b. Total European Revenues | _____ | _____ |
| 12. a. TPM Revenues | _____ | _____ |
| b. European TPM Revenues | _____ | _____ |
13. Approximately what percentage of your maintenance revenues is derived from:
- a. Mainframe Maintenance _____%
 - b. Minicomputer Maintenance _____%
 - c. PC Maintenance _____%
 - d. Peripheral Equipment Maintenance _____%
 - e. Other _____%

14. Approximately what percentage of your maintenance revenues is derived from maintaining the following manufacturers' equipment?

- | | |
|--------------------------|--------|
| a. IBM | _____% |
| b. Digital | _____% |
| c. Bull | _____% |
| d. Unisys | _____% |
| e. ICL | _____% |
| f. Hewlett-Packard | _____% |
| g. Wang | _____% |
| h. Data General | _____% |
| i. Convergent Technology | _____% |
| j. Altos | _____% |
| k. MAI | _____% |
| l. Olivetti | _____% |
| m. Apple | _____% |
| n. Stratus | _____% |
| o. Norsk Data | _____% |
| p. Prime | _____% |
| q. Sun | _____% |
| r. Apollo | _____% |
| s. Nokia | _____% |
| t. Other _____ | _____% |
| Other _____ | _____% |

15. Please identify the percentage of your maintenance revenues derived from the following industry sectors:

- | | |
|----------------------------|--------|
| a. Banking and Finance | _____% |
| b. Manufacturing | _____% |
| c. Government | _____% |
| d. Services | _____% |
| e. Public Sector | _____% |
| f. Retail and Distribution | _____% |
| g. Equipment Manufacturers | _____% |

IV. Mergers/Acquisitions

16. Has your company been involved in a merger or acquisition in the last twelve months? If so, please give details.

V. Current Service

17. What services does your company currently offer, or plan to offer, other than pure hardware maintenance?

	Current	Future
Planning	<input type="checkbox"/>	<input type="checkbox"/>
Installation	<input type="checkbox"/>	<input type="checkbox"/>
Disaster Recovery	<input type="checkbox"/>	<input type="checkbox"/>
Application S/W Support	<input type="checkbox"/>	<input type="checkbox"/>
Consultancy	<input type="checkbox"/>	<input type="checkbox"/>
User Training on Hardware	<input type="checkbox"/>	<input type="checkbox"/>
Preventive Maintenance	<input type="checkbox"/>	<input type="checkbox"/>
System Software Support	<input type="checkbox"/>	<input type="checkbox"/>
De-Installation	<input type="checkbox"/>	<input type="checkbox"/>
System Configuration	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>

VI. Future Services

18. In which of the following areas, if any, do you plan to diversify in the next two to three years?

	Current	Future
a. Hardware Sales	<input type="checkbox"/>	<input type="checkbox"/>
b. Application Software Sales	<input type="checkbox"/>	<input type="checkbox"/>
c. Training	<input type="checkbox"/>	<input type="checkbox"/>
d. Computer Supplies Sales	<input type="checkbox"/>	<input type="checkbox"/>
e. Systems Software Support	<input type="checkbox"/>	<input type="checkbox"/>
f. None of the Above	<input type="checkbox"/>	<input type="checkbox"/>
g. Other	<input type="checkbox"/>	<input type="checkbox"/>

VII. User Criteria

19. What, in your opinion, are the reasons why users choose TPM?

a. TPM is cheaper	<input type="checkbox"/>
b. TPM is more efficient	<input type="checkbox"/>
c. TPM offers local service	<input type="checkbox"/>
d. TPM offers single-source maintenance	<input type="checkbox"/>
e. TPM offers better service	<input type="checkbox"/>
f. TPM service is more flexible	<input type="checkbox"/>
g. Other _____	

20. Conversely, in your opinion what are the reasons why users do not choose TPM service?

- a. Satisfied with manufacturer ☐
 - b. Manufacturer has a service advantage ☐
 - c. TPM is unable to support software ☐
 - d. Users are contractually tied to manufacturer ☐
 - e. User fear of vendor response ☐
 - f. Unaware of TPM ☐
 - g. Other _____
- _____
- _____

VIII. Competition

21. Finally, who do you consider to be your principle competitors in the TPM marketplace?

